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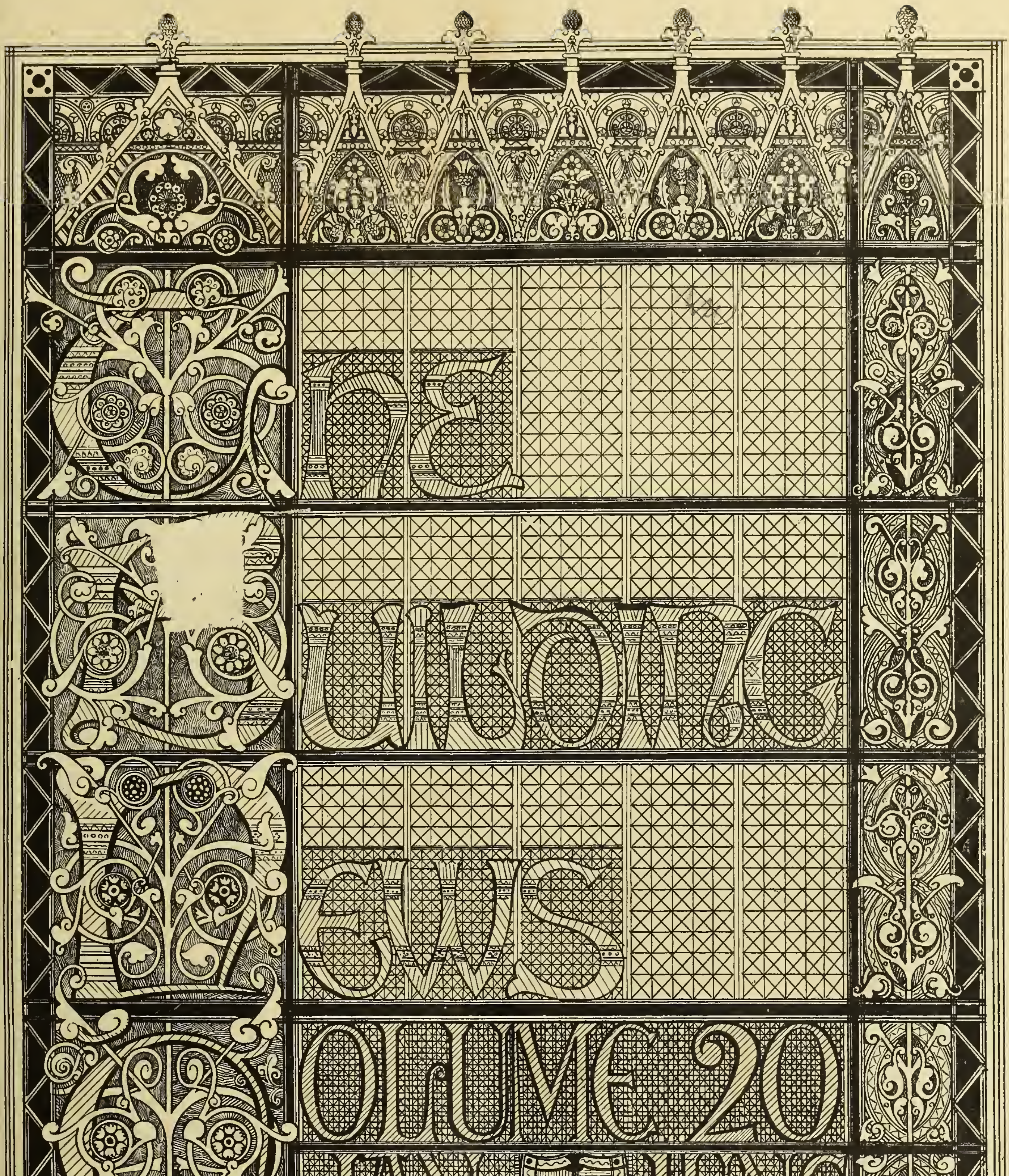

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

THE MONT CENIS TUNNEL.

THE world no longer builds Pyramids. We fear that it no longer builds cathedrals. But its genius is devoted to works not less marvellous and mighty. Time was, not long ago, when amazement was created by a tubular bridge, spanning an arm of the sea, beneath which the proudest line-of-battle ship could pass, all sails set. Then a great stimulus was given to human pride by the opening of the Suez Canal; yet now a work has been accomplished distancing all example. The Alps have been tunnelled through, and Italy has established a complete communication with the west of Europe. That is, a road has been hollowed through Mont Cenis, one of the most gigantic mountains in Europe—a road between seven and eight miles long, perfectly even, begun at both ends simultaneously, and finished in the centre with mathematical accuracy, and principally by water-power compressing air. A brief record of the Herculean labour may be interesting. It was commenced in 1857, when, by a trigonometrical survey, a tracing was obtained of the axis of the contemplated tunnel. This, in itself, was not an easy task. Every observation had to be taken at altitudes of from three to ten thousand feet above the level of the sea, amid incessant atmospheric fluctuations. An observatory was erected on the peak of Grand-Vallon, literally above the clouds, and the signals thence were transmitted to the two opposite valleys of Fourneaux and Bardonnèche. In these, around the poor hamlets which could scarcely gather in food sufficient for their own inhabitants, a new population, on a large scale, was planted, and we may conceive the difficulty of supplying it, far away as it was from towns or railways, with provisions, besides constructing canals, reservoirs, workshops, and engine-houses, and fitting up a stupendous complication of machinery. Water had to be brought through an artificial channel from a torrent more than a mile away. A gas manufactory had to be set going to light the men at their labour, and then the boring machines began their work, at which, unless when interrupted by political causes, they were employed, day and night, for twelve years, until last week, when the last fragment fell, and the artisans from France and the artisans from Italy, coming face to face, after mining towards each other so long in the bowels of the mountain, cheered again and again through the friendly gap. The tunnel was to be eleven feet wide, and eight feet high; a frame work, rolling on double-rails, and carrying ten perforators, was advanced incessantly close to the face of the rock; by hydraulic pressure these augers worked into the stone as a gimlet works into a plank, only that they receded after every blow, when a jet of water followed to clear the holes and cool the iron; when eighty of these perforations, about a yard in depth, had been made, workmen and apparatus were taken back two hundred yards, behind massive gates of beams, called safety doors; a fresh gang then loaded the mine and fired it; a third pumped in fresh air, to clear off the smoke and exhalations; finally, a fourth carried away, in trucks, the débris that had crumbled from the rock. At first, owing to the novelty of the operation, this process could only be carried out about once a day; the machinery was new to most of the men who worked it; there was risk in forcing the work; and thus about a yard in twenty-four hours was all that could be accomplished. Gradually, however, as the work became more familiar, its rate was accelerated, and twenty yards a week was the average. But it is not to be supposed that when the excavation, eight feet high by eleven wide, had been made, that the tunnel was complete. These dimensions would have been utterly inadequate to the object in view. Enlargement had to be made by the ordinary methods, and the surface hewn smooth by the axe into the conventional horse-shoe arch, afterwards lined with elaborate masonry. The pick went first, the mason followed, all three—the borers, the pick, and the mason, keeping apart at regular distances. Perhaps, however, the most interesting facts connected with the undertaking are those which bear on the special machinery employed, and particularly of the two systems for obtaining the requisite supply of fresh air. From this point, for a time, we follow somewhat closely the report of the Italian engineers. Their first idea was that of what is called a column compressor. It had been estimated that a tension of six atmospheres was required for the compressed air to become a power in the tunnel, and to produce this a fall of eighty-five feet was necessary. Accordingly, at Bardonnèche, the whileom unknown village, now grown into a town encircled by a camp, a reservoir of Cyclopean size was erected, nearly a hundred feet above the engine-house; ten compression-columns, siphon-shaped, were fitted to it, each communicating with a chamber full of natural atmospheric air, of such a height and size that the impetus of the water, when turned on, was just sufficient to carry it to the top. This was effected by opening a valve in the column, through which the water in the upper part rushed, driving before it the water at rest below the valve in the lower part of the siphon formed by the column. Rapidly rising above its original level at the bottom of the chamber, the invading water thus compressed the air contained in it, until the necessary tension was obtained, when the force thus created opened a valve at the top, through which every particle of the compressed air was expelled. The valve then closed, preventing any downward rush; the water was let off to be used again; another supply of atmospheric air was admitted, automically, so to speak, and so the work went on at the rate of about three pulsations a minute, a prodigious power being in constant course of production. Scientific opinion was, originally, very doubtful as to the success of this apparatus. The compressed air, it said, would burst any recipient that could be constructed for it; it would, at all events, ooze through the thickest plates of iron; it could not be carried a long distance through any pipes that could be manufactured. But soon the experiment vindicated itself. Lighted tapers were passed close along the tubes, and their flames were never stirred. Mechanically, the engineers of the tunnel were triumphant. Then arose the question—could workmen live in that deep hollow, with eight thousand feet of mountain piled above them, and no possibility of providing ventilating shafts? But the compressed air did double duty. Besides driving the perforators, a portion of it being allowed to escape created an atmosphere as free as that of the hill-side, flowing in a constant stream, and, moreover, keeping the excavation cool, in spite of the vast number of lights unavoidably in use. The compressed, indeed, was found to be much cooler than the atmospheric air. Such was the system at one end of the tunnel. At the other, hydraulic wheels and pump-compressors were employed, though the machinery directed against the rock was the same. In fact, by water was Mont Cenis hollowed right through its giant base; by water was every ton of necessities brought up to the scene of operation from the deep valley below; by water was the vitiated air sucked out of the tunnel, even when it had been driven close to the centre of the mountain. In the result, all the prophets of evil were disappointed; the machinery worked perfectly to the last, not a puff of steam was ever used, and the cost per dynamic horse-power was incomparably lower than that of the agency hitherto deemed indispensable. Well, the engineers have completed their task; the scientific class has learned a fresh and important lesson. What other results may be in prospect it is, as yet, impossible to tell. When the undertaking was begun, the whole region to be traversed by the line belonged to Italy. After the battle of Solferino, however, France advanced her frontier to the crest of the Alps, and took an immediate interest in the gigantic work, which became the subject of a special treaty. She would gladly, indeed, have had a hand in its execution; but to this the Italian Government would not consent. It had planned the tunnel, guaranteed its cost, and incurred the risk of failure, and it insisted upon retaining its control, and making of it an exclusively Italian trophy. But the French, after its completion, are to buy one half, at the rate of £120 per yard. It will easily be imagined with what anxiety the engineers must have watched the approach of their labour to an end. Even among them prevailed a tinge of the superstition which largely infected the population of workmen engaged. When near to the heart of the mountain, would not some insuperable and mysterious obstacle arise, defeating their aim for ever? Again, had their observations been so perfect, had they dialled their path so accurately, that the two hollows would ultimately break into one, in a straight line, or might they not pass one another in that world of rock? Intense, therefore, was the excitement, and equal the joy when, from the French side, the miners heard, from the Italian side, the sounds of blasting, and the steady blows of the perforators as they struck, with irresistible force, into the narrow wall that alone remained between them now. And still more thrilling the moment when light answered light through the shattered screen, and France and Italy shook hands in the middle of Mont Cenis, eight thousand feet below its summit. The work thus brought to a happy close, with singularly few accidents, and no delays except those caused by political events, is the longest in the world, besides being remarkable for the marvellous accuracy of the borings from two opposite ends to a central junction. It is in length thirteen thousand yards. Its height, as increased, after the machine-drilling, by ordinary implements and manual labour, is within three inches of 20ft., allowing for the passage of any load that could possibly be dispatched. The width is slightly more than 26ft., permitting the laying of a double line, with the usual "six foot" between. It was anticipated that the excavation of this vast hollow would bring to light some novelties of geological science; but the result, so far, has been disappointing. Two-thirds of the distance cut through were composed of schist; then came an immense belt of limestone, to the infinite delight of the workmen, whose energies went apace while this comparatively soft material was being operated upon; but afterwards, their patience was sorely taxed, though their intrepidity never failed, by a solid heart of quartz, which broke the tools, required double blasts, and was broken through, not yard by yard, but inch by inch, so that twenty-four hours of unremitting exertions often showed an advance of only two or three feet, though a pressure of ninety-six pounds to the square inch had been almost incessantly applied. And now that the doubts naturally created by an enterprise so stupendous are solved by its success, we may ask what are the benefits to be expected from a triumph against the probability of which, not many years ago, would have been quoted the ancient, discouraging, ignorant saying, *opposuit natura?* Nature opposes nothing, which men undertake with heart, and hope, and knowledge. It is the old story of Dr. Lardner offering to eat the first steamer that crossed the Atlantic. It is again the still older story of "natural boundaries," of which the Isthmus of Suez was formerly one and the Pyrenean range another, while the Alps could never be traversed unless by a Napoleon on a mule, leaving a Moscow of human ruin in his wake. Within a very little time, the tourist may demand his railway ticket, not over, but through the Alps, penetrated for him, and converted into a road by the united action of air and water only. This, then, will open Italy to the commerce, and especially the Indian traffic, of Europe, so long shut out from her, throwing two tides upon Genoa and upon Brindisi, and promising to revive the prosperity even of Venice. The tunnel has been a costly construction, yet no prediction could be more safe than that it will repay its charge a thousand upon a thousand fold. And it has this speciality, it must last as long as the earth. No other monument of man's labour can be compared with it for durability. Great pyramids, temples, columns, aqueducts, cathedrals, fortresses, and the various high-reared structures adorning the earth, from the Towers of the Cyclops to the Chinese Wall, must moulder to their foundations in the process of ages; but even time cannot destroy an excavation. It may be choked, its roof may partially fall through, its artificial lining of masonry may be warped from the rock, and encumber a neglected and forgotten railway—a result not impossible in the event of a protracted and absorbing European war; but the tunnel must remain, even though it should be left for centuries disused, and be discovered in some remote period, and wrangled over by pedants as an antiquity. However, even supposing it of less importance than it actually is —an importance scarcely to be over-estimated —the lesson in mechanics which it has taught has written many a new and instructive page in the Book of Science. Of course, conditions existed in this case—the altitude and abundance of the water sources especially—which would not be found everywhere; still a great principle of dynamics has been, if not actually evolved from the project of the Italian engineers, at any rate freshly-adapted, and armed with powers never before dreamed of. The air and water which, without cost of fuel, drove the Mont Cenis perforators, would drive any stationary machinery existing. The Americans have invented for similar borings an apparatus in which jets of fire are employed against the rock; but their apparatus, so far as its details are before us, appears excessively complicated, which is not a usual characteristic of American machinery. But, although the tunnel is practically complete, in so far as that its advanced headings have been driven to the centre of the mountain, the necessary enlargement has been carried only a part of the way, while the inner crust of stonework covers as yet only partial sections at either end. This work, however, is so easy that the progress of a day even is fairly distinguishable. The smoothness of the floor, so to term it, will, after this comparatively simple task has been finished, render the laying of the permanent way an ordinary matter of contract, so that within a few weeks at the latest the line through Mont Cenis would be available, were it not that difficulties apart from the prodigy wrought by the Italian engineers will yet remain. Northward of the tunnel, a branch is being constructed to connect it with the Paris and Lyons Railway, with a large number of formidable physical obstacles to overcome—viaducts, bridges, and perforations of the iron-like quartz so abundant in that region. Need it be said that the pick lies idle on the ground, and that all the gunpowder exploded is used for purposes other than those of blasting? The navigators are in uniform, bearing rifles shoulder to shoulder with those who employed them. The clerks of the works are pelting the Prussians with bullets from behind the thick forest trees of the Franche-Compté. Thus the war impedes, upon this path also, the labours of peace. Otherwise a very brief time would elapse before a train starting from Calais would proceed on an unbroken gauge to Brindisi, a distance of 1,390 miles. At the Italian end, too, some colossal works have to be accomplished, and though there are none except natural impediments in the way of the engineers, no success gained by them can bring about the grand practical result desired until the French and the Germans have buried the hatchet between them. The Chevalier Maus, therefore—whom history will credit with the original conception of the Mont Cenis tunnel, while the Signori Sommeiller and Grattoni must ever be remembered for its execution under their designs, and the inspiration of their courage—may have to wait several months before the crown is put upon his matchless project. As it is, however, his estimates as to expense and time have been borne out to an astonishing degree, since, of course, he was not responsible for interruptions due to political causes. He said the excavation might be pushed on at the rate of a mile and a half a year. This calculation was almost precisely justified, taking one actual working period with another. The valley of the Arc was joined to Bardonnéche at the rate of a mile and a half per twelvemonth. This, in itself, may be a source of legitimate pride to that generation of Italians who, for the first time in centuries, have shown themselves emulous of the ancient Roman daring and the ancient Roman genius. Moreover, the fact that his theoretical delineations, absolutely copied after the practical surveys of the engineers, brought the duplicate tunnels to a meeting exactly where it was intended, is rendered more noteworthy by the circumstance that the tunnel, although, as we have said, perfectly even and smooth, is not upon a plane, the difference of level between the two termini amounting to no less than 435ft., the slopes running up from the openings and terminating in the centre. At Fourneaux the height above the sea at which operations commenced was only 3,964ft., whereas the first stroke of the Italian pickaxe on the southern side of Mont Cenis, or Mont Frejus, as that section of the range is sometimes called, was at an altitude of 4,381ft. The two gradients however, were totally different one from another. That from Bardonnéche has a rise of 1 in 2,000, that from Fourneaux a rise of 1 in 45, the latter suggesting no slight difficulties in the way of traffic, and the more so since a continuous drip is expected, and has, indeed, been provided for by gulleys in the lining of masonry. The rails, consequently, will be wet and slippery, so that, now the problem of the tunnel itself has been solved, another will arise—how and with what engines to work a line which may be expected to carry an enormous traffic? The Italian engineers, then, are not yet entitled to rest beneath their laurels. Having made the road, they must show how it can be used. Had they possessed the information—impossible for them to possess until after the event—which experience has brought forth, they would have worked probably more closely towards a level, but it was feared that a deluge might burst from the bowels of the mountain and swamp the labourers at their work unless provisions were made for rapidly running off the water. No such catastrophe occurred, and this monument of the modern Cyclops is not stained with the blood of a single human being.

SHAM EAVES-CORNICES OR REAL PARAPETS?

OUR city architecture—our warehouses, and offices, and shops—is mainly an architecture with parapets. In the great bulk of it, the roof does not overhang the walls; it finishes inside them, and they are carried up several feet above the gutters as a protection against accident or fire. The question is, how to treat these parapet walls? They evidently form the true finish of the building next the sky: is it possible to make them a beautiful and effective finish to it? After walking through mile after mile of London streets one might think that this question suggested an absurdity. All that human ability can do with a parapet, one might conclude, is to lay a strip of York stone on the top of it, and stick a dummy eaves-cornice against its face. This is the modern decoration of parapets. This is what all the talk about true principles of art—about the necessity for ornament to spring out of actual construction—comes to in average practice. The actual construction is a parapet, and the ornament we select for it is an eaves-cornice. Principles of art, like many other principles, do indeed sit very lightly on some of those who profess them; for it is not only the rigid Classic school, who make a religion of not thinking for themselves, whom we may thank for the absurdity in question. If the practice were confined to them it would be a pity to waste our readers' time in considering it. A rigid Classic man, to all appearance, will soon be as great a curiosity as a dodo. It is wasting force to fight against a fast-vanishing race; but, before they quite disappear, it might be both useful and interesting to preserve a record of their singular habits. Their great peculiarity is, of course, the designing of all buildings by a kind of uniform recipe like the following:—"How to make an architectural design for a church, theatre, picture-gallery, prison, palace, workhouse, tabernacle, public office, public-house, west-end terrace, model lodging-house, or row of cottages. Set out an oblong block large enough to contain all the rooms that are wanted. Divide the front of this block into as many horizontal strips as there are stories in height. Put a row of dots along each strip, at equal distances, as if you were dibbling for cabbages, and plant a window at each dot; or, at opposite points, on the ground story, a door instead. This forms the 'stock'—the basis of all design; but you may season it according to taste and means. If you have but a little money to spare, put an architrave round each window; if you can afford more, put a pediment over each as well; if you are regardless of expense, and wish to be magnificent, put a pilaster between each pair of windows, and a portico in front of the whole. Finish the front, whatever it is, with a cornice at top; and get the details of cornice, pilasters, pediments, and architraves, from Sir William Chambers or some similar authority." It is mere cruelty, as any one can see, to tell a follower of this school that a buiding with a parapet ought to differ from a building without. You are depriving him of his formula—the plank which saves him from drowning in a sea of difficulties. You are wanting him to think for himself, when his whole system is arranged to save the need of thinking. You are asking him to begin altering the crazy old dwelling that shelters him, when he knows that if he once begins he can never leave off; the whole affair is so rotten that it will fall about his ears if he touches a stone of it, and the part you take exception to is really no worse than the rest. There is little use in quarrelling with one detail where the rest are as bad: you have only to wait, and they will all come down together. Let the orthodox Italian clique have as many sham cornices as they like—the more the better. It is to a different quarter that these remarks are directed—to the authors of our Neo-Classic semi-Gothic designs. We do not address the real Gothic architects of the day, because they do not commit the absurdity in question; nor the rigid Classic ones, because they cannot help committing it. But between these two extremes is a large and increasing class. It includes men with Gothic tastes, whose clients will not have Gothic; men who admire Mediæval work, and yet feel that it needs altering for modern purposes; men who want to put some life into the dry bones of Italian formulas; and men who are vainly trying to originate, by themselves, a new style altogether. Their work, of course, differs greatly. Very much of it shows a striking want of harmony between the different details employed; a contradiction in character, perhaps, between its main features and its minor ones, or a number of attempts at novelty with no unity of feeling to connect them. But in spite of these faults, much of it does at least display the real construction. With one almost universal exception it is more honest than the rigid Classic, if not more beautiful. The doors, the windows, the lintels, the arches, the piers, have at any rate no disguise; but there commendation must stop. Look at the top of the elevation and the principle is abandoned. The roof is hidden behind a parapet, and the parapet is disguised with an immense cornice. After thinking for himself to some extent in all the rest of the work, the designer falls back on the Classic man's recipe at last; he gives up the attempt to make his decoration spring out of his construction. He lets the parapet shift for itself, and be as ugly as it likes; all he can do is to put up a great piece of scenery in front of it.

The most obvious fault of this practice is, perhaps, the unreality of it. But it has others little less serious. Suppose that the heavy horizontal cornice were, what it is not, the natural finish of our street architecture. Even then, for an English city, it would be a most unfortunate finish, and one that it would be worth avoiding, even by a change of system. For what can look worse in a street view than a series of horizontal masses not ranging with each other, not following any order or design, but jumping up and down in purely accidental fashion? What can look worse, in short, than the perspective of a London street on the present plan? It matters nothing what the separate buildings may be; their joint effect is simply detestable. And the reason of this is that while they are all trying to look horizontal the main conditions of the case make each of them by itself a separate vertical strip. The horizontal system, indeed, may be carried out under stringent regulations with success. If people are ready to pay the price for it—the price in liberty and individual convenience—they may have streets like those of modern Paris. If they will submit to interference at every point; to having the height of their buildings, the levels of the cornices, the number and size of the different stories all settled for them by a law like those of the Medes and Persians, they may follow the horizontal principle to some purpose. They may then have uniformity and regularity, and all the rest of the Classic virtues, to their hearts' content. But none of these things can they possibly get while every man does what is right in his own eyes. If A is to build a warehouse six stories high, and B an adjoining one of five stories, there is no hope for street architecture on the horizontal type. But there is every hope of it on the opposite one. For while the first system can only live at all in an atmosphere of rules and regulations—of stiffness, and evenness, and regularity—the other asks above all things for life and freedom. Give it roughness and irregularity, and it makes it striking and picturesque. This is its own element. It will deal with our strips of house-front, and make them artistic by making them vertical. And to make them so, its first step will be to remove their absurd sham cornices. Other changes will come in the track. It will put gables here, steep roofs there, and domes in a third place—just as they may be practicable and useful. But first of all it will make every parapet appear a parapet, and every dummy cornice disappear altogether. It will show the roofs wherever it can, and show them through the perforations of the parapet, if they cannot be seen above it. It will give us a skyline not too hideous to look at; and it will admit light instead of casting shadows into our narrow courts and passages. For the darkness which they produce is another fault, and a serious one, of our useless cornices. One might expect that where light is so precious as it is in a city street, the architect would make a main object of economising it. If he stretched a point either way, his temptation, it might seem, would be to omit the cornice when it was wanted. No one could think that he would be always putting cornices in when there was not the faintest excuse for them,—that in dealing with a narrow street he would wish to darken it still further by unnecessary projections. It is a strong instance of the force of habit that it should overpower considerations of use as well as of beauty. Light in a London office is worth money. To shut it out, is either directly to lower the rent, or at least to diminish the chances of letting. And yet such is the power of custom, that owners will submit patiently to have their property injured, if the injury does but come in a familiar and accustomed form. There is a fourth fault which might be noticed in connection with the subject, though the three previously referred to are enough for our purpose. This is the propensity which some of these sham cornices have to fall on people's heads. Inspired, perhaps, with more artistic feeling than their contrivers, they seem, at times, to feel themselves "de trop." They become conscious, as it were, of occupying an indefensible position, and lose no time in getting out of it. We have said it is sham cornices chiefly which do this; for to a real cornice, if properly constructed, it is hardly possible. The main stone of such a cornice is tied down by the weight of the roof, and cannot be overbalanced by any pressure that is likely to come upon it. It is very different when all that keeps it down is the weight of a thin parapet, in some cases only a foot or two in depth. Bad art and bad building generally go together, and the present case is no exception to the rule.

What we have said is not meant at all to bear up on the question, whether in the abstract parapets or overhanging eaves are best. In thin-walled buildings our own preference would be for the latter; guarded, perhaps, as at the S. Giles' Schools, by an iron railing attached to the gutter. But what we wish to insist on is this: if the parapet is adopted, let it be made the best of. Let its decoration spring out of its construction,—as it does in the thousands of Gothic parapets, which seem to exist in vain as far as the designers of our London warehouses are concerned. Let the parapet be made the ostensible, as it is the actual finish to the design; and let the eaves-cornice, whether Gothic or Classic in type, be confined to elevations which have eaves to require it. All that is wanted below a parapet is a moderate-sized string-course to act as a drip; and this will neither darken our streets nor endanger our lives.

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NEGLIGENCE, INCAPACITY, AND CORRUPTION OF INDIAN PUBLIC WORKS DEPARTMENT OFFICIALS.

THE Indian Government deserves all praise for its prompt action in a case of loss of life, occasioned by the rascality of a contractor, which should have been discovered by the officials connected with the Public Works Department. We give a short account of the matter condensed from the *Bombay Gazette*:—

> In June last one of the buildings in course of construction at the Gun Carriage Factory at Allahabad fell in, and a loss of several lives was caused by the accident. The Government took the matter up, and appointed a committee to investigate the causes of the accident, and to report on the responsibility of the several officers of the P.W.D. contractors, or others, connected with the design or construction of the building. The report showed that the failure of the centre wall was the cause of the accident, and that the mortar used was of the most inferior description. The bad quality of the mortar, besides, was not confined to the one building, but was observable in all the other buildings of the factory, including sheds for machinery to be driven by steam power and a chimney shaft 123½ft. high. An analysis showed that the mortar contained only 6 per cent. of lime. The Government proceeds in its resolution to inquire in what degree the responsibility rests on each of the individuals concerned in the execution of the work. Beginning with the supervisor, one Bartram by name, Government decides that he has proved himself utterly unfit for the place he holds, and directs that he should be removed from the Public Works Department. With regard to Major W. Jackson, of the Bengal Staff Corps, who was the Executive engineer under whom the whole of the work which fell, and also the majority of the other buildings in which bad mortar was used, were carried out, the Lieutenant-Governor of the North-Western Provinces stated that he was wanting in the qualites essential to a successful service in the Department of Public Works, particularly in energy and power of control, and that he trusted too much to his subordinates. It was therefore considered impossible to arrive at any conclusion but that this officer should be removed from the Public Works Department. The Superintending Engineers in charge of the circle while the various buildings for the factory were in progress were—Lieutenant-Colonel C. D. Newmarch, R.E. (since dead), Major F. H. Cobbe, R.A.; Lieutenant-Colonel H. Rose, S.C.; and Lieutenant-Colonel F. Alexander, S.C. With regard to Major Cobbe, it is decided that it is not desirable to retain him in the Department of Public Works. With regard to Colonel Rose, the resolution says, "His Excellency in Council would have had doubts whether an officer who has shown such remissness as is apparent in this case ought to be allowed to remain in the Public Works Department, but in consequence of Colonel Rose's long service would have been content with depriving him of his position as superintending engineer, had he given no other cause for dissatisfaction. Two other serious instances of failure in duty, while he was an executive engineer at Rawulpindee, have, however, been very lately brought to the notice of the Government of India, which, taken in connection with the present case, have led his Excellency in Council to the conclusion that it would not be right to retain this officer in the department." Colonel Alexander has, in consequence of his proceedings in this case, been placed in a grade lower than that in which he would otherwise have appeared. Colonel Hodgson, who held the combined offices of Chief Engineer and Secretary to the Government of the North-Western Provinces, in the Public Works Department, during the whole of the period under review, comes in for a share of the blame. It is considered that "had he made such inspections of these particular works as might fairly have been expected of him, the bad quality of the mortar that was being used could not have escaped his notice." He is also held "mainly responsible that officers who evidently were physically unfit for the proper discharge of their duties should have been allowed to retain their charges. This occurred with reference to both Colonel Newmarch and Major Cobbe.

The lime contractor is to be criminally prosecuted, and the Governor-General concludes his order by a most severe and well-deserved reprimand to all concerned.

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At a meeting of the Birmingham Town Council, on Monday, it was resolved to hire a steam street roller for six months, and also to procure a return of the expense of various kinds of paving for one of the streets of the town.

ARCHITECTURAL DRAWINGS.*

THIS work, which Mr. Burges has dedicated to the memory of Robert John, Baron Carington, consists of 75 plates of drawings, mostly of architectural details, with a few that may be more properly termed artistic, as relating to costumes, personal ornaments, &c. It has been published by subscription, and the subscribers, for whose interests the author has been almost too scrupulous (at least, such we anticipate will be the future verdict of the public), are, we think, to be congratulated upon the acquisition of their volume, though some of them have waited a considerable time for it.

In his introduction, Mr. Burges assures them that it will be found to contain exactly what was promised in the prospectus, viz., fac-similes of certain drawings, made at various times for his own instruction, with a short description of each subject; and as the letter-press of such a work as this is very seldom read, the description has been confined to the reasons that induced him to make the drawing and the various points of interest in the subject; and further on he says, in conclusion, he trusts he may honestly claim to have fulfilled the conditions of the original prospectus, "to deface the stones as soon as the plates have been struck off, and, above all, to allow no copies to go into the trade."

While giving the author full credit for his honesty and consideration for his subscribers, we cannot but feel some regret that these conditions, which would not have been imposed by any one but himself, were ever made. If a couple of hundred gentlemen have been the gainers, the public will certainly be losers by the arrangement, and many a rising young architect, who has not had the opportunity of enrolling his name in the fortunate list, will, hereafter, bemoan his sad fate, for the book, though by no means attractive, is eminently a useful one.

Its history, according to the author, is as follows:—"Some twenty years ago, when a pupil, I was taught that the proper way to study was to draw rough perspectives in a little sketch-book, accompanying these rough perspectives with small drawings of the details and a few measurements. The great object in a month's excursion was to fill the sketch-book, and then on our return to town the perspectives were to be drawn out more carefully in pencil upon yellow tinted paper, with an occasional shadow in Indian ink. It is needless to say that this latter process of drawing out rough sketches, left very much to be desired as to accuracy of proportion, to say nothing of detail and construction. After my pupilage, I went abroad for several autumns, with some of my friends, who made exceedingly pleasing sketches upon the spot, but unfortunately these were only one degree better than those produced under the former process, for each of us tried how many more sketches he could make in a day than his companion. On our return home these sketches were cleaned up, had their margins cut, were then sorted, pasted carefully into nicely bound scrap-books, and reserved, as a very cynical friend used to observe, 'for the inspection of parents, friends, and idiots.' I am ashamed to say how many scrap-books I filled with the sketches made during a few autumns, and at this point, under ordinary circumstances, I should have stopped. I had passed my pupilage, I had taken my foreign travel, and I should have gone into practice with these sketches as my stock-in-trade. Luckily for me, my cynical friend did not cease to ask why I drew this sketch?—of what practical good was this detail?—why had I not drawn the full-size curves of some particular moulding?—and, in fact, he asked me so many questions, and such embarrassing ones to answer, that I was at last obliged to confess that the sketches had been drawn for the vanity of making pretty pictures, and that they were useless, or nearly so, for the information they contained, and that the true destination of all such sketches should rather have been the waste-paper basket than the scrap-book."

We have quoted this confession at length, in order that the architectural students of the present day, whose names are not on the subscribers' list, may have the benefit of it, for the practice referred to has by no means yet been abandoned, nor are its pernicious effects so generally known and acknowledged as they should be. Were it otherwise, the value of the work under review would be less than it is. Still, we are aware that a better state of things does now exist, a fact, however, due in a great measure to the influence of Mr. Burges, who has for years been preaching by example as well as precept to his juniors upon this very subject. The members of the Institute of Architects have in their "Transactions" (Nov. 19, 1860) a valuable paper by him upon architectural drawings, in which the above experience and his matured views are clearly set forth, and the Architectural Association are showing by their "Sketch-book" how they have taken to heart the aforesaid advice. Subsequently the author had an opportunity of visiting Italy and France, and, as he says, he forthwith made up his mind to turn over a new leaf, and to measure, and as it were dissect, the architecture, and particularly that of the best work of the thirteenth century in the latter country. How much of this determination is due to the remarks of the cynical friend, we may gather from the continuation of this autobiographical sketch of the author, who set himself, as he describes it, to write a sort of grammar of thirteenth-century architecture, and to illustrate it with carefully-measured details, without wasting time by trying to make finished drawings, by means of the surroundings of the objects specially in view.

Although, unfortunately, this scheme fell through, partly from its being forestalled by that of M. Viollet le Duc's Dictionary, the advertisement of which then appeared, he continued the drawings for his own instruction, without any intention of publication.

The result of this tour, "a heap of rough cartridge paper of different sizes, blotted with ink, stained by rain, sometimes lined with pencil, sometimes with indelible brown, and often with common ink," Mr. Burges says he found to be to himself very valuable, for they taught him "the why and the wherefore which is the base of all architectural knowledge."

The determination of the author to give to others the benefit of what he had found so useful to himself, was one for which his subscribers cannot be too grateful, seeing that the personal advantage to himself likely to accrue by so doing was necessarily very small. We, however, venture to think that it will prove larger than his modesty has at all allowed him to calculate upon.

The preparation of the drawings for publication, and transferring them to stone, has been the labour, and we doubt not a labour of love, of Mr. Swindon Barber, Mr. Saunders, Mr. Tarver, and Mr. Lonsdale, and we are glad to learn that a very interesting section of it, that relating to costume, is likely to be continued by the two last of the above-named gentlemen, and republished in a separate form with additions.

To quote once more from the author's introduction, one of the conditions of the original prospectus, which he declares to have been scrupulously fulfilled, was the following:—"To insert no detail or stone joint that has not been drawn on the spot." Herein lies the keynote and special value of the volume whose contents we are about to describe, but of which our space will not on the present occasion permit us to say as much as we could wish.

To Beauvais Cathedral and the details of its construction the first eight plates are devoted, the choir being, in the opinion of the author, the most beautiful of all the beautiful buildings for which we have to thank the architects of the thirteenth century—owing its excellence to its designer having tried to improve upon the work at Amiens, which had been begun a few years before, and partly to the accident which rendered necessary the supplemental columns between the great arches.

We confess to some surprise at this statement, and the more so from its enunciation by the author, whose conception of beauty, as we presume to be set forth in his own works, we should have thought so different. Beauvais has but little of the massive and sturdy proportions of which he is so fond, and appears to us to show French Gothic already far declined from its highest point towards perfection that it once attained.

"One of the defects of the choirs of the great cathedrals of the Middle Ages is the disproportion between the side arches and those of the apse, and in the original design of Beauvais the defect was even aggravated, inasmuch as the side arches were only three in number, and therefore unusually wide."

Now the method in which a fundamental error of construction was remedied in this instance, not only without detriment, but even with advantage to the design, was, as no doubt most of our readers know, most remarkable; but it seems incredible that such a patched-up bungle, however admirable the patching, should surpass every other effort of the matchless architects of the Middle Ages.

Nor in our opinion does it do so, and we are inclined to think that Mr. Burges views with too great favour, this "white-headed boy" of his, to the illustration of which he has devoted so much time and labour, and which occupies the largest space appropriated to any single building in his volume. Not that we grudge one plate given to this subject, but we cannot endorse the above, as we think, too flattering testimonial to its merits; and when we hear of the difficulties which had to be surmounted, and some of which were not able to be surmounted during the process of its measurement, by reason of the "various iron bars by means of which the ediffice is now kept together," notwithstanding the clever patching alluded to, we think it too evident that "something was wrong about it," and that that something is written in the comparative weediness of its proportions and the flimsiness, of which we would single out, as examples, the lanky scaffolding-like flying buttresses shown in plate 6, and the secondary arcade of the triforium in plate 7. Mr. Burges describes the tower, which likewise came to grief, as it fell in 1573, as a wonderful conception, of which records more or less correct are still extant, and we mention it in passing, as we could wish that some reproductions of the drawings of it "in several collections in Beauvais" could be more generally accessible.

The choir and its details are, in the work before us, tolerably fully given. They illustrate a section through the side of one of the apsidal chapels (plate 5). The lower parts of the building are the more carefully illustrated because the more attainable, but the heights of the inaccessible portions were procured by dropping tapes over the iron bars alluded to. Mr. Burges regrets that he did not draw these bars themselves, as though he regarded them as modern expedients, it is just as probable that many of them may be as old as the restoration of 1284, and therefore not as useless as well as unsightly as those with which Sir Christopher Wren has marked Westminster Abbey.

In the author's remarks on plate 1 (plan of this apsidal chapel), attention is called to the moulds of the mullions and arches of the windows being of exactly the same section,—"not a very desirable precedent to follow." A reference to the elevations of the windows, plates 7 and 8, will show at once that this defect is one of those marking the decadence of the style to which we have above referred.

We must now take leave of this valuable work, although we must again refer to it, as we have only just dipped into its contents, the variety in the character of which is only equalled by their scrupulous accuracy, and the intelligence with which the secrets of the construction of the masterpieces of the mediæval age have been investigated and explained by the author.

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* "Architectural Drawings." By W. BURGES, Architect. London: Printed by William Clowes & Son, Stamford-street and Charing Cross, 1870.

MAX EMANUEL AINMILLER.

WE have sustained a severe loss in the death of Max Emanuel Ainmiller, one of our art veterans, who breathed his last here on the 8th inst. Born in the year 1807, he devoted himself to architecture on his entrance into the Munich Academy. Here, however, he showed a special talent for ornamentation, and devoted himself to this branch of art. On completing his studies he received an appointment as ornamental designer in the Royal Porcelain Manufactory at Nymphenberg, but quitted this to join Frank in glass painting, for which he had long felt a decided inclination. He applied himself specially to the technical branch of this art, and we do not assert too much in saying that it owes to his unfailing exertions that distinguished position amongst the sister arts which it now holds. In former years he also drew the greater portion of the ornaments in the large windows produced by the celebrated manufactory at Munich, and justly shared the European fame that establishment then enjoyed and sustains at the present day. Under his direction were produced the splendid glass-paintings for the Cathedrals at Ratisbon, Cologne, and Speyer, for the churches of Au (a suburb of Munich), the University church at Cambridge, and latterly for S. Paul's Cathedral, in London, the Cathedral in Glasgow, and some public buildings at Edinburgh. His former studies in architecture subsequently led him to architectural drawing, in which he was distinguished both for the beauty and correctness of his designs, principally in the Gothic style. Ainmiller has contributed much to the splendour of the new Pinakothek. The Academy of Munich recognised the merits of their former pupil by admitting him as a member of their body, and he was honoured with several orders.

Munich, Dec. 18, 1870.

AZTEC DISCOVERIES IN MEXICO.

ADVICES in a Texan paper from Santa Fé state that Governor Arny, the special Indian agent for that territory, has found the Canon de Chelly, which was explored for twenty miles. The party found canons whose walls tower perpendicularly to an altitude of from 1,000 to 2,000ft., the rock strata being as perfect as if laid by the skilled hands of masons, and entirely symmetrical. Among these ruins of ancient Aztec cities many of them bear the evidences of having been populous to the extent of many thousands of inhabitants. In one of these canons—the rocky walls of which rose not less than 2,000ft. from the base, and whose summits on either hand inclined to each other, forming part of an arch—there were found high up, hewn out of the rocks, the ruins of Aztec towns of great extent, now tenantless, desolate. In one of those rocky eyries there remained in a state of good preservation a house of stone, about 20ft. square, containing one bare and gloomy room, and a single human skeleton. In the centre of the room were the evidences that fire at some time had been used. The only solution of this enigma thus far ventured is that these solitary rooms were the altar-places of the Aztec fires; that from some cause the people at a remote period were constrained to abandon their homes, but left one faithful sentinel in each instance to keep alive the flame that, according to the Indian traditions of these regions, was to light the way of Montezuma again to his people—their hoped-for Messiah and their eternal King. A close examination of many of the ruins proved that the builders must have been skilled in the manufacture and use of edged tools, masonry, and other mechanical arts. But who these people were, whence they came, and whither they are gone, is now probably one of the mysteries to remain eternally unsolved. Some of the ruins are reported to be stone buildings seven and eight stories in height—being reached by ladders planted against the walls. Round houses, 20ft. in diameter, built in the most substantial manner of cut stone, and plastered inside, were also found in excellent preservation. Astonishing discoveries have been made of gold and silver regions richer than any yet known on this continent. They are supposed by well-informed persons to be the East mines, of which tradition has handed down the most marvellous tales, and the mines themselves discover unmistakable evidences of having been successfully worked ages ago.

A PLEASANT COUNTRY CHURCHYARD.

WE ought to be very thankful that light has been brought to bear on the disgraceful condition of a Devonshire churchyard, which might, for all that has been done to prevent it, have caused a virulent outbreak of some contagious disease, and that in one of the most convenient, spots for spreading it throughout the kingdom. Devonport—now really a part of Plymouth—is in the parish of Stoke Damerel, and the parish churchyard is the only burial-place provided for the inhabitants. With the rapid increase of the population of Devonport it became necessary to add five acres of ground to the churchyard. This was done, and Mr. Rawlinson, who was in 1853 appointed to inquire into the health of Devonport, reported that there was room for 9,000 interments more. Since then 12,000 have taken place. In all, we are told, "from first to last something like 80,000 corpses have been deposited in these five acres, which would give each grave seven occupants, nearly six out of the seven being deposited in the present century." An order made in 1862 for closing the older portion of the burying ground, and prohibiting interment in the other part within a foot of existing graves, appears to have been systematically and scandalously disregarded. Coffins have been wedged into the ground wherever it was found by probing the earth with an iron rod that there was room. Ends and sides of coffins, bones, and even entire skeletons, have been repeatedly seen when new interments were being made. The inspector before whom the investigation was made mildly suggested that the yard should be closed in twelve months' time! We do trust the inquiry will at least result in some punishment for those who have sanctioned the continuance of this utter disregard of all the sacred associations connected with the dead, and of all the reasonable precautions that should guard the health of the living.

SNOW IN THE STREETS.

A HEAVY fall of snow always finds us unprepared in London. We are not going to grumble. We ought to be thankful that in the main thoroughfares, after it had lain for a day or two, and, in fact, when the officials seemed convinced that the frost really meant lasting, and that it consequently would not remove itself, the snow was swept and shovelled into heaps, and finally disposed of. This is at any rate an advance on the "let-it-alone" system which prevailed during the last great fall of snow four years since, when Fleet-street and the Strand became successively a lengthened slide and a continuous quagmire. But we have even now a desire to see something done for the side streets and the suburban thoroughfares. We hardly see why the omnibus conductors should charge us an extra fare on account of the frost and snow, because the scavengers, and vestries, and local boards, and other sleepy officials, don't do their work. We find one crumb of comfort, as usual, in other people's misfortunes. It is at least consoling to know that the Americans, who look for heavy snowfalls in winter time, have similar cause for grumbling. And the richest joke of all is to find the *Scientific American* advising the New York authorities to adopt the "effective method of getting rid of ice and snow" in use in London. The New Yorkers are welcome to our "effective method," and to the "authorities" who *don't* put it into practice.

THE BRADFORD CORPORATION ABATTOIR.

ON Monday the Corporation Abattoir, adjacent to Leeds-road, was opened. The buildings have been erected from the designs of Messrs. Lockwood & Mawson. At the east end of the abattoir an open space of ground is set apart for the drovers and dealers, where the live animals are sold. Enclosed lairs comfortably shielded from the weather communicate by doors immediately with the slaughtering place, and as soon as an animal is killed and dressed it can be readily passed forward by means of easily-worked appliances, into the carcase market, where the dead meat is sold. The carcase market is enclosed by an iron palisading, and outside this is a covered roadway, where the carts will receive the dead meat for conveyance to the retail dealers. On the opposite side of the roadway are a range of offices for the wholesale butchers. The pig market and slaughtering place is apart from the other erections, at the easterly end of the abattoir, every convenience, such as hot water for scalding purposes, &c., being provided. Light is obtained from the north, the floors are laid with bricks covered with asphalte, water is plentifully furnished, and hydraulic lifts will enable heavy beasts to be raised and passed bodily into the carcase market without any difficulty. The cost of the premises will be heavy, but Bradford now possesses one of the most complete abattoirs of any town in the kingdom.

BUILDERS' CONTRACTS.

THE Council of the Royal Institute have altered clauses 19 and 20 of the General Headings for contracts agreed to by them on the 1st of August last, and published by us 28th of October, 1870. The clauses now stand as follows:—

19. If Employer make default for days in payment of any moneys due to Contractor, or if works be delayed for months by proceedings of adjoining owners, Contractor to be at liberty to suspend works, and require payment for works executed, materials wrought up, and loss on goods or materials purchased for the works, and not to be bound to complete contract. *Contractor to be entitled to such interest, and at such rate, on payment unduly delayed, as the architect may certify, or in case of dispute, as the Referee may award.*

20. Arbitration Clause—With regard to quantity or value of extras and omissions, or variations on the Contract, and questions of delay, or the withholding of certificates, or the true intent and meaning of the drawings and specification as to cost; *or as to the construction of the Contract, or as to any other matter arising out of the Contract, except as to matters left to the sole direction of the architect, under clauses* 1, 9 *and* 10. The Arbitrator being an Architect and a Fellow of the Royal Institute of British Architects, agreed to by the parties, or appointed by the President (for the time being) of the Royal Institute of British Architects. The Arbitrator to award costs between Employer and Contractor.

L'ABBAYE AUX HOMMES, CAEN.

THE Church of S. Stephen, attached to this abbey, is said to have been founded by William, Duke of Normandy, soon after the conquest of England. The sketch shows the aisle and chapels round the apse, which were built about a century later; some antiquaries consider them to have been built under Simon de Trevières, between the years 1316 and 1349. Mr. Wood (in Pugin's "Normandy") says: "At first sight I should have pronounced it a work of the twelfth century; but on examination there are circumstances which excite a little suspicion. The crenated ornaments on the ribs of the groins, the number of small shafts round the piers of the chapels, the openings between the chapels, the disposition of the little shafts against the wall, the smallness of the capitals to the slender shafts about the principal piers, are none of them exactly what we should expect in a work of the eleventh, or even of the twelfth, still less is the whole together what they should expect of the fourteenth century. To found a true decision it would be necessary to know exactly the authority on which the latter date rests, and to examine the work itself with this especial view; a practised eye would certainly find further discrepancies if such a difference of time really exists."

H. G. W. D.

TEIGNMOUTH, DEVON.—On Saturday last, December 31, the Teignmouth Local Board met to decide on the "Coombe Vale" competition plans, six sets of which were sent in last August for competition, bearing respectively the mottoes of "Experience," "Comme il faut," "Via," "Try," "Devonia," and "P. G. J." The first premium (£20) was awarded to Mr. S. Templer, architect, Teignmouth, for set of plans with the motto "Via." The second prize (£10) was given to Mr. J. Chudleigh, architect, Newton, for his set of plans bearing the motto "Try."

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 482, *Vol.* XIX.)

Plate 16.—Construction of a Wreath for Stairs, Having Six Winders Landing on a Level Floor.

Fig. 1 exhibits ground plan of stairs. Wall-string circular.

The radius of this circle at cylinder is eight inches; or sixteen on diameter from centre to centre of rail. There is no particular limit to radius. It may be ten inches, two feet, or more. Width of hall and height of story always regulate this matter.

To lay down position of winders. Let E F be face of last riser landing. Then make E C equal half the width of a square step. Commence at C, and set off on circle five divisions equal to C E. Next, square over H L, and draw one or two square steps. This done, draw wall string and divide L F into six equal parts. Mark position of winders, and enclose circle with tangents A, B, C, D. The upper part of wreath standing over line D K falls level; consequently that line is its ordinate.

The tangents and winders must now be unfolded in order to show pitches and height of wreath. This is given at Fig. 2.

Let margin on right be the edge of a board. Commence at any point, say A, and draw the line marked "Height." Next, draw B, C, D. The letters here correspond with those on plan, and are tangents unfolded from A to D. Let winders at Fig. 2 stand in the same position as those of Fig. 1. That is to say, the tangent lines and not the curve.

Set off the two winders below A. Also square steps. Let under side of rail rest on these. Set off half its thickness. Next, set off under side of rail above landing to suit long baluster, shown on square step. This done, set off half thickness of rail, cutting through 5. We are now ready to draw pitches of wreath and ramp connecting with it—these pitches being entirely discretionary from fixed point 5.

It would, however, be imprudent to have them on a straight line, say from 5 to E, as that would cause the upper part of wreath to stand too high over the riser C on plan, and make baluster on right and left of C much longer than any of the others. This will be presently shown.

Let us assume 5, 3 for the upper pitch, and 3 E for lower. Find height for lower part of wreath by squaring over 4 P, which gives P 2 the required height.

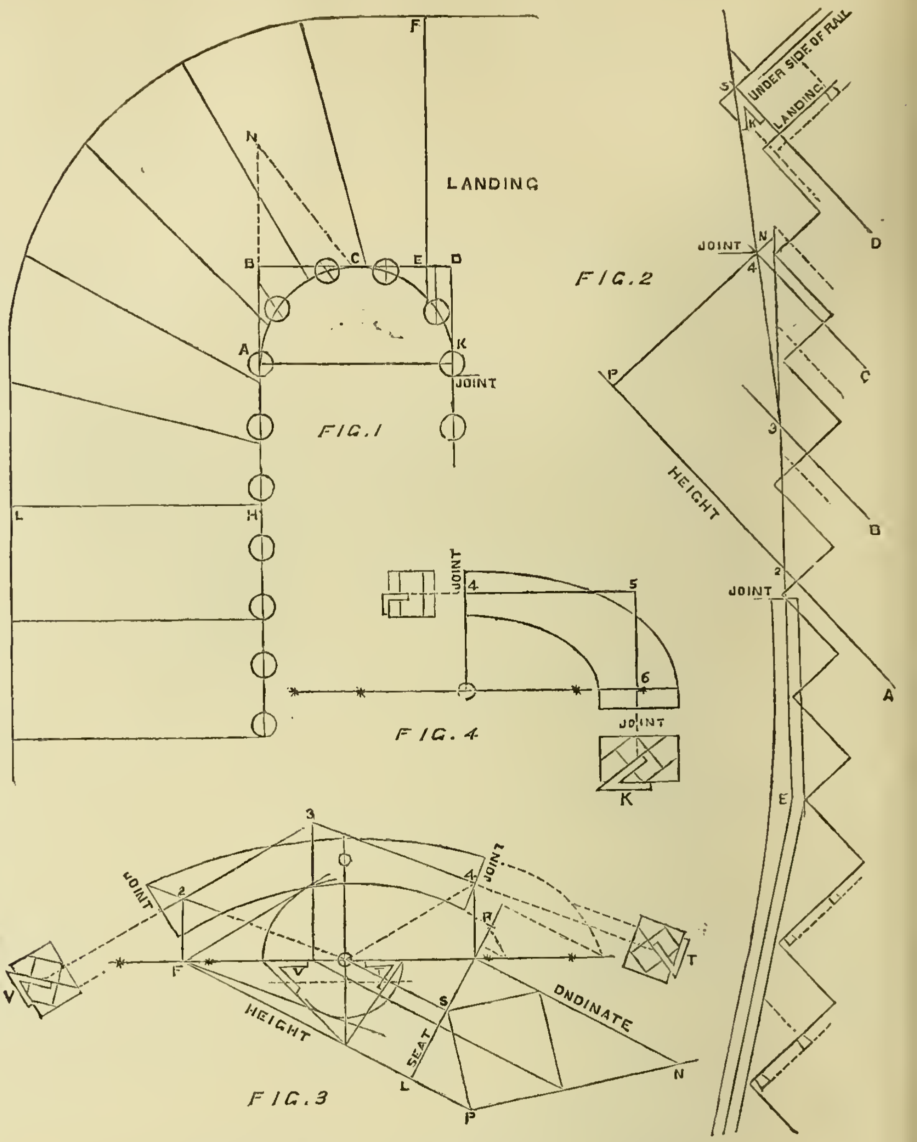
Next, find a direction for ordinate, by extending 2, 3 to cut at N, giving N P. Let A N on plan equal it. Join N C, this being the ordinate. Draw through centre of baluster parallel with it, cutting tangents. Again draw through those on right parallel with D K, cutting tangent D C. This done, transfer intersections made on tangents to that of winders on the right. The dotted perpendiculars show the position of balusters; also their variation in length when standing under wreath. Dotted lines on right and left of C show two balusters standing under pitch 3, 5, which are longer than those under 2, 3. Thus proving the necessity for two different pitches on lower part of wreath.

This should be adopted for all wreaths that stand over flyers and winders, landing on a level floor.

Fig. 3 shows construction of mould for lower piece of wreath. Let sides of square equal A B on plan. Extend any side, say P N. Let this equal corresponding letters at Fig. 2. Draw ordinate; also lines from the other three corners parallel with it. Next make seat square with ordinate. Let height L F equal that of 2 P on the right. Draw from F through intersection made by seat and ordinate. Thus giving pitch or major axis.

To find half the length of elliptic curves: Let S R equal one side of square. Then set off half width of rail on each side of R. This done, draw parallel with ordinate, cutting pitch. Next, square over the minor axis O O. Let this equal one side of square. Set off on each side of O half width of rail.

Proceed, and find points to insert pins for striking curves. This done let remainder of drawing be on a board intended for the mould. For example: Lay its edge on; mark all intersections made on pitch by lines parallel with ordinate.



NEW ELEMENTS OF HAND-RAILING.—PLATE XVI.

Square them over. Next, transfer distances given by seat and corners of square. Then draw 4.3 and 3.2 extended. These, to be correct, must equal corresponding figures on pitches to the right.

To prove correctness of bevels and elliptic curves: Set off half width of rail below pitch. Draw parallel with it, cutting both bevels; that of T being for joint 4. Transfer the distance given on the right of T to each side of 4. Next, transfer that on left of bevel V to each side of 2.3. Then draw parallel with 2.3, cutting line O 2. Now insert pins, and sweep mould with a string. Then the elliptic curves pass through points just given; proving the accuracy of the work.

The reason why the bevel T applies to joint 4 is: the line from F, being parallel with tangent 3.4 on mould; then the circle touching that line, and cutting at T, shows at once where the bevel should be applied.

Leave no straight wood on convex side of mould. This gives the opportunity of slightly curving the lower part of wreath to connect with ramp, and removes that very objectionable feature —*a straight line;* which is often observed on the under and upper side of a wreath connecting with a ramp. This should never be the case, for it is just as easy to have bold and flowing curves, which give grandeur and effect to the work, as well as pleasure to him who executes it.

The mould, in its present position, represents the upper surface of plank. V T is the stock of bevels applied to lower surface. Square sections show the joints, on which is marked the width and thickness of rail. Have lines, made by bevels, continued on under and upper surface of plank, and square with joints. Then the application of the mould is: to make its tangents fall over those on plank. The edges of mould, in this position, give the wreath its cylinder curves.

Fig. 4 shows mould for upper part of wreath. This drawing is simply one-half of a semi-ellipse, and may be made at once on the board intended for the mould. For example: Let the line 4.5 equal corresponding figures on pitch, Fig. 2; also 5.6 equal one side of square on plan. Then, by drawing 6 O extended, we have the major axis; the wide end shown on the upper pitch, Fig. 2.

Set off on each side of 5, half-width of rail. Then draw parallel with 5 D, cutting pitch. Thus giving wide end of mould.

The angles 5.4 and 5 D contain bevel K. Its application is shown at Fig. 4.

Have three or four inches of straight wood from joint to 6. Now set off, on each side of joint 4, half width of rail. Next, find points to insert pins; then sweep curves with a string.

The square section shows the joint. The thickness of rail stands between two slabs that are cut off parallel with surfaces of plank. Let the stuff be cut square through, and make joints square with tangents. Now lay mould on. Keep joint on its wide end fair with that of stuff. Let 5.6 stand opposite bevel line on joint. This done, mark surface along edges of mould.

The same application answers for the other side. The centre joints of this wreath are indicated by 4 on each piece. When brought together, the lines made by the square, and that of bevel T must stand exactly opposite, thus throwing both pieces in their true position.

This rule must be strictly observed with every wreath, no matter what its character or situation may be.

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On dit that Mr. C. G. Mayland and Mr. T. Roger Smith are candidates for the office of architect to the London School Board.

Gaff's Trustees, Falkirk, are about to erect new schools.

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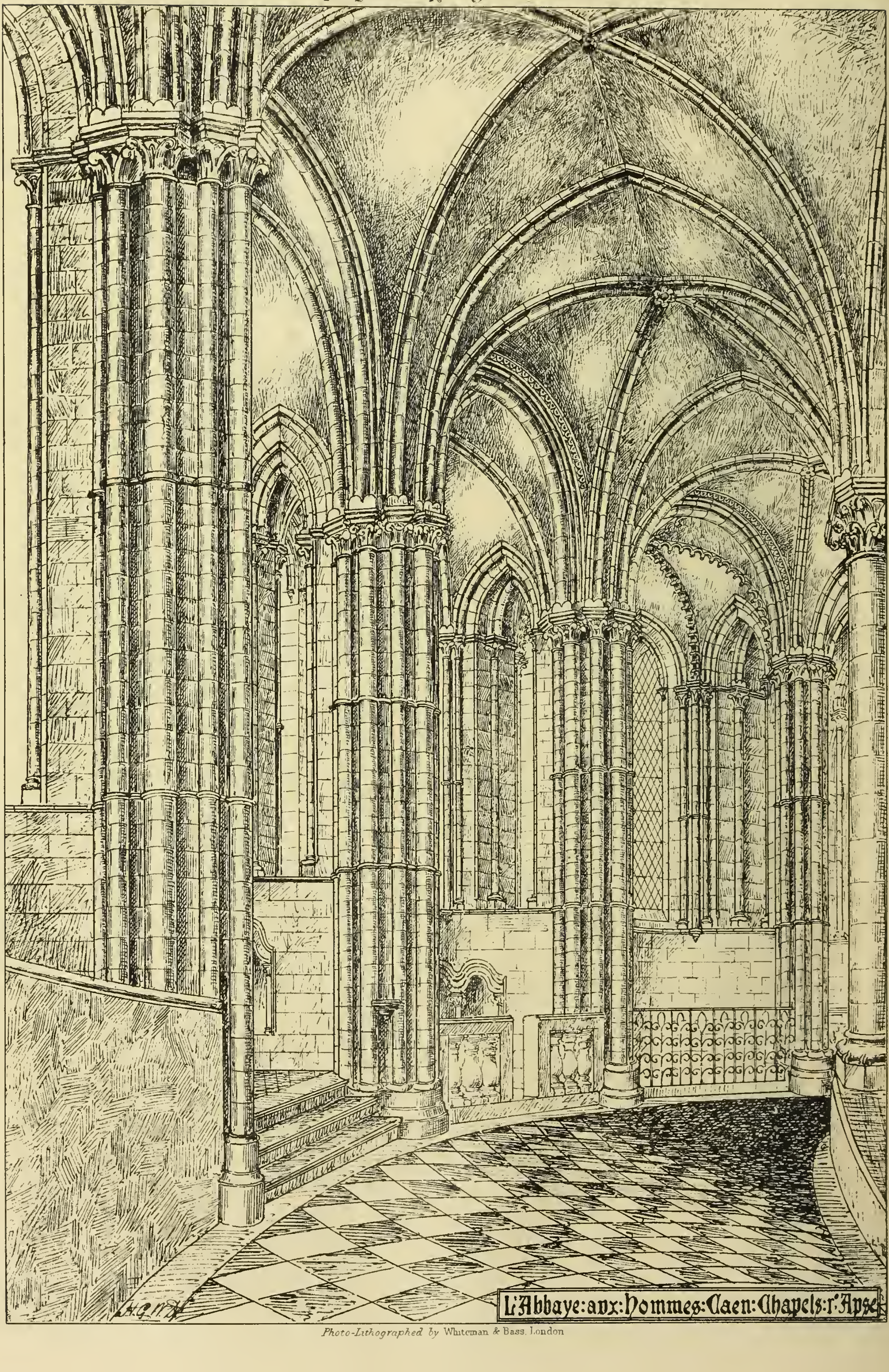
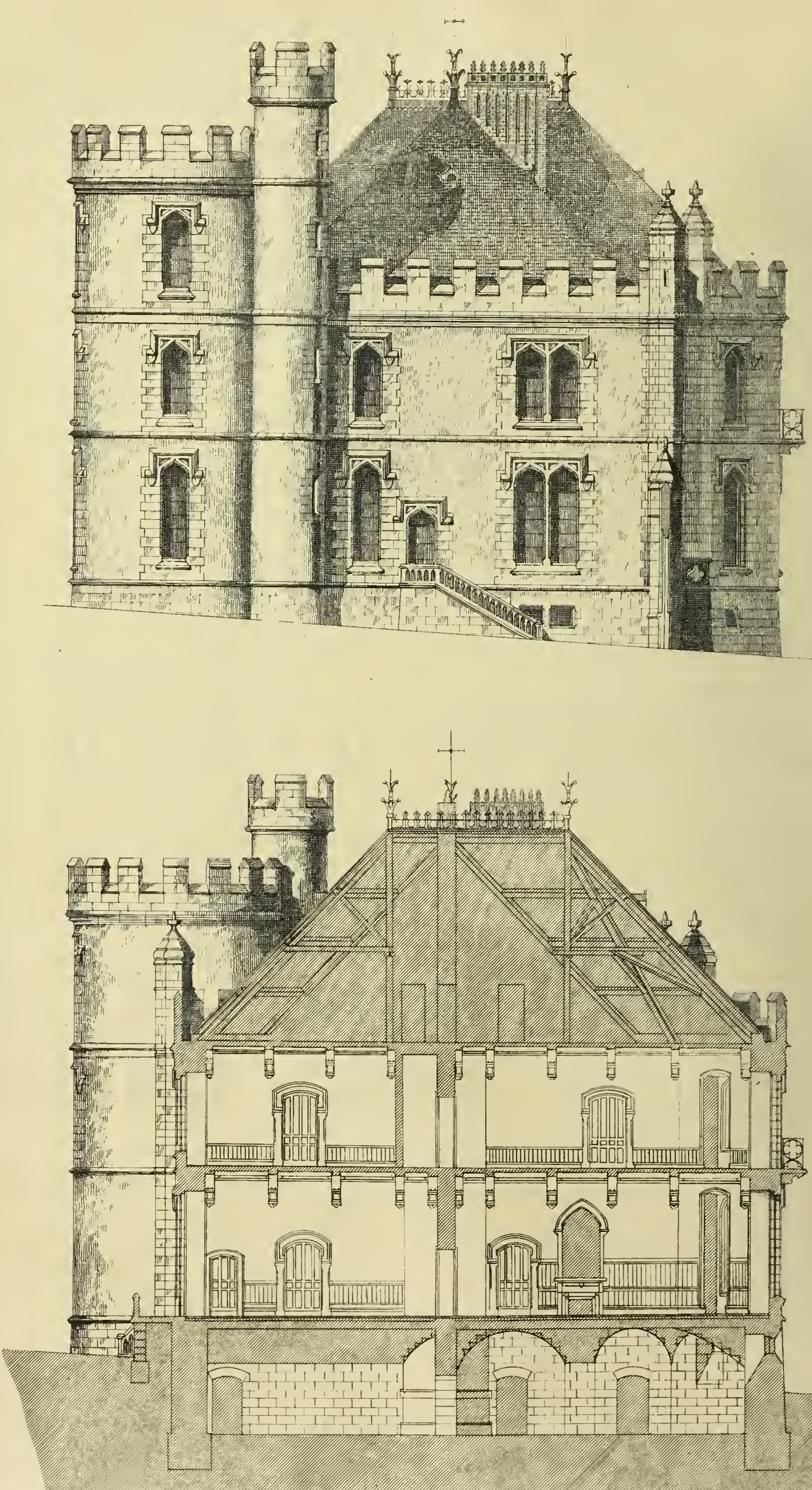
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



L'Abbaye:aux:Hommes:Caen:Chapels:r'Apse

Photo-Lithographed by Whiteman & Bass, London

Jan 6 1871



E. Pocock, Lith

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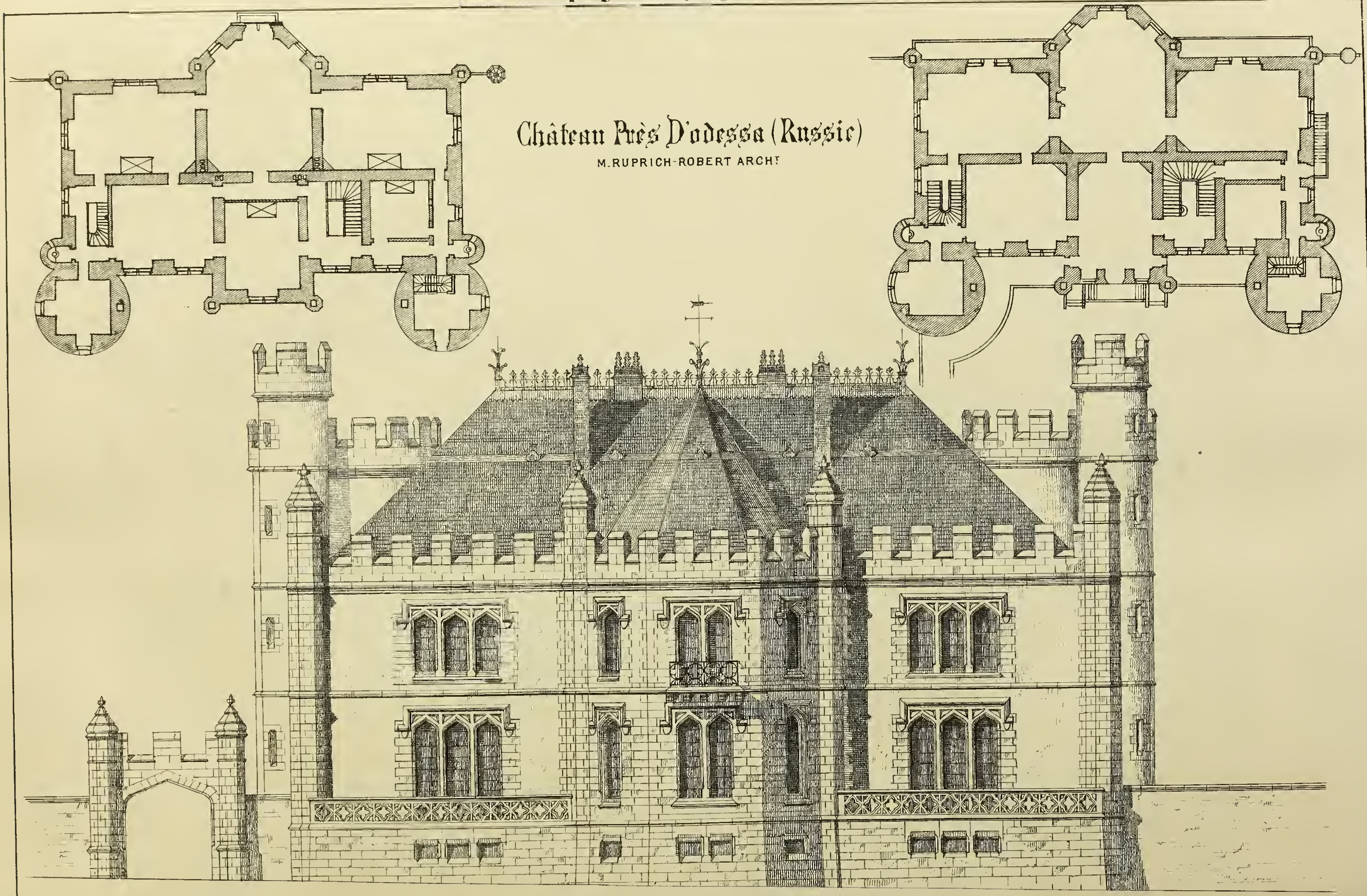
Château Près D'odessa (Russie)

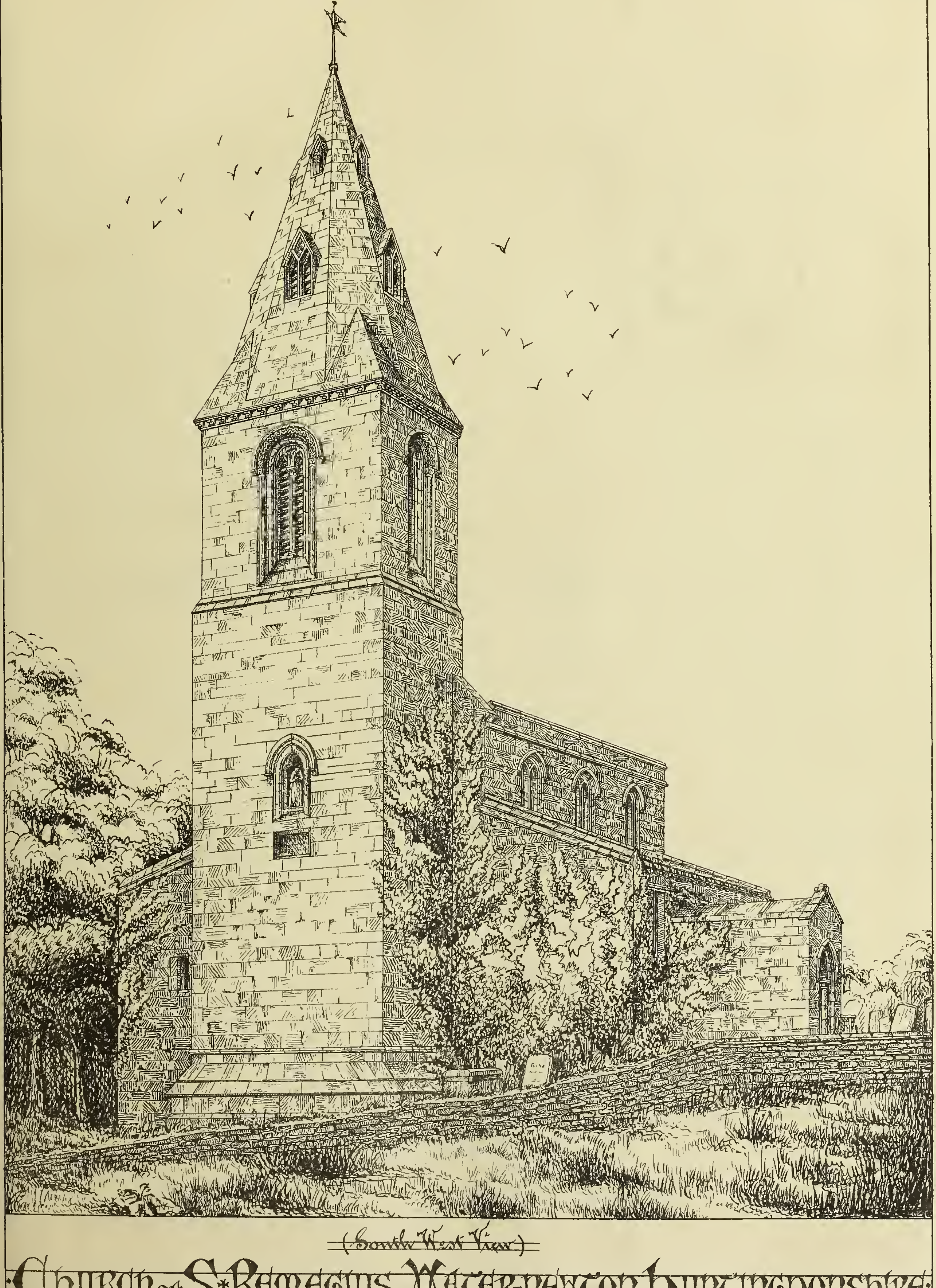
M. RUPRICH ROBERT ARCHT



Château Près D'odessa (Russie)

M. RUPRICH-ROBERT ARCHT

Printed by Whiteman & Bass.



(South West View)

CHURCH of S. REMEGIUS, WATER-NEWTON, HUNTINGDONSHIRE

Sketched August 1870.

Photo-Lithographed by Whiteman & Bass London

THE SURVEYORSHIP OF BRIDEWELL AND BETHLEHEM HOSPITALS.

THE attitude assumed of late years towards the profession by corporations, committees, and similar public bodies is not an agreeable one to contemplate, and suggests some unpleasant reflections as to the causes which have induced the present condition of public feeling. It must be obvious to everybody who has given any attention to the subject, that architects are not trusted in the manner they formerly were; their honour and integrity are more frequently called in question, they are allowed less latitude and discretion by their employers, and there is a disposition to fetter them by the imposition of checks and safe-guards which are supposed to ensure their honesty and to prevent them abusing their clients' confidence. This feeling of mistrust is of recent growth. In the early part of the century, architects were entrusted with the expenditure of large sums of money almost without restraint, and their good faith and honesty were seldom questioned. Such men as Soane, Wyattville, Ware, and others less known to fame, had the disposal of considerable amounts entrusted to them; they conducted the whole of the financial arrangements as well as the architectural details of their works, and successfully maintained their independence, resenting, not unfrequently with acerbity, the interference of their clients in matters which they considered did not come within their control. The imperious manner of some of the elder architects, not only towards their assistants but also towards builders and clients, is a very remarkable feature in the history of the profession, and some of the anecdotes related in illustration are extremely amusing, not only on their own account but also on account of the striking difference they present in the relationship of employer to employed at the present time. Some few of the elder men still retain something of the traditional style of behaviour of the old school, treating their clients as if they were conferring an obligation on them, and refusing them almost any voice in the architectural arrangement of the buildings to be erected. These instances are, however, rare, and in the large majority of cases architects nowadays study their clients, humour their caprices, and consult their comfort and convenience in a way that would make the hair of some of the old practitioners stand on end could they witness it. The position of architect and client has been completely reversed within the last fifty years. Formerly, it was the architect who dictated to the client; now it is the client who dictates to the architect. The increasing number of persons who call themselves architects and the inferior social position they occupy, as compared with the architects of the last generation, have no doubt had much to do with the existence of this state of things. Formerly, an architect was as a matter of course a gentleman—a man of education and a man of honour, but this is not by any means a matter of certainty now, and the public have not been slow in observing the change that has taken place. This is the real explanation of the altered state of circumstances between architect and client, and architects have only themselves to blame for it, through their not being more jealous of the honour of their profession, and discountenancing irregular practices by its members.

In confirmation of the foregoing remarks, we may refer to the proposed appointment of a surveyor to the Hospitals of Bridewell and Bethlehem, which will very well illustrate the estimation in which the architect is held by the public. A printed paper has been issued by the hospital authorities defining the duties and position of the surveyor, as well as the emoluments of the office. His salary is to be £250 a year, for which sum he shall attend all committees, and all views when required, report on all repairs and alterations to the hospital property, make estimates, measure the work, and certify on completion. He will also be required to survey all houses and buildings before they are let, to report upon their annual value, superintend any repairs or alterations required, and draw the plans on the leases. Once a year he is to make a complete survey of the whole of the houses belonging to the hospitals, and report to the governors thereon, more especially with a view to prevent encroachments. He is also to keep for the governors, in books to be provided for the purpose, plans of all the London and country estates of the hospitals, but it is not clear whether he is expected to take the plans, although it would seem from the fact that the books for the purpose of containing them are to be provided that the plans have not been taken. And generally, he is to perform such other duties as surveyor of the hospitals as the court, the committee, the president, or treasurer may direct.

This last clause is important, and it might be desirable that the candidates should be informed more precisely what are the views of the court, the committee, the president, and the treasurer as to the duties incumbent upon the surveyor. Would he, for example, be expected to clean the windows, or would blacking the treasurer's boots be considered one of the services attaching to his office ?

In addition to the salary of £250 a year, the surveyor is to receive a commission of 2½ per cent. upon the cost of all new buildings erected under his superintendence, provided the building so erected should cost £2,000 and upward, but for all other buildings costing less than that sum it would appear he is to receive no commission. This commission of 2½ per cent. is to include measuring the work, besides preparing plans, specification, and estimates, and superintending.

The governors reserve to themselves the right of obtaining other professional assistance, if they should think fit, especially when important new buildings are contemplated.

In the advertisement announcing the proposed election to the vacant post, it is stipulated that all candidates must send in answers to certain questions, propounded by the governors in a printed form in addition to their letter of application, both of which must be in the candidate's own handwriting. In this form the candidate is expected to state, beside his name, address, and age, his occupation for the last ten years (a tolerable probation), whether he has been connected with any public establishment, and, if so, in what capacity, and whether he has had experience in keeping accounts. It is difficult to guess the reason why information should be required as to the candidate's connection with any public establishment, and still more so why a surveyor should be expected to be familiar with keeping accounts, as is apparently expected of him, unless the governors intend to combine the two offices of accountant and surveyor under the clause which enacts that the surveyor should perform such other duties as the court, the committee, &c., shall direct.

We have every desire to speak temperately, but we can but express our conviction, derived from a perusal of the documents we have just referred to, that the governors of the two hospitals have cast a most unmerited slight upon the profession, and are endeavouring to obtain more work for less pay in a manner quite unworthy of such a wealthy and influential corporation. The salary offered is in itself inadequate, being less than that given by the principal City companies, while the duties are more severe and onerous, and the incidental advantages very small and scrupulously regulated. The annual expenditure of the two hospitals is stated to be between £25,000 and £26,000, they have considerable estates in London and elsewhere, and the duties of the surveyor in relation to this outlay and the proper care of their house property will absorb a considerable portion of his time. Then he is to attend all committees and views when required, which seems very unreasonable, as he cannot be required for such committees as committees on account, house committees, and so on : the surveyors to the City companies only attend views and estate committees as a rule. It would seem that the surveyor is to draw the plans of the hospital property on leases without receiving payment; if this is so intended it is a very shabby proceeding, as the cost of taking and drawing of plans on leases has always been paid to the surveyors of estates.

The restriction of the commission on new buildings erected under the surveyor's superintendence to a commission of 2½ per cent. is still less to be defended, and should be firmly resisted by the profession. The surveyors to most of the City companies and the London estates of noblemen are paid the full percentage upon buildings erected by them, and their cases are precisely similar. It is a very mean and dishonourable proceeding on the part of the governors to deprive the surveyor of what is really an appanage of his office, and limiting the amount upon which the half commission is to be paid to £2,000 is the climax of meanness. The salary of £250 is paid to the surveyor for fulfilling the duties of surveyor to the corporation, that is to say, surveying their property from time to time, reporting on the value of houses for letting or other purposes, making specifications for repairs, examining accounts, and so on ; and if he is expected to act also as architect he ought in common justice to be paid for his services at their proper market value. It may well occur that the surveyor might be called upon to prepare drawings and specifications for three buildings in the course of a twelvemonth, each under £2,000 in value, to the aggregate let us say of £5,000, and the governors would thus obtain work which if paid for at the usual rate would have cost £250, and they would get the whole of their surveyor's other services without payment.

If architects are found to undertake work on these terms the public will soon discover that 5 per cent. is an extortionate charge and will consider 2½ per cent. ample remuneration. Has the Council of the Institute nothing to say with regard to this portion of the subject ? The Institute lately addressed a remonstrance to two of its most talented members in consequence of their having joined in a competition in which the payment proposed was less than the scale sanctioned by the council. It unfortunately happened that no better result was obtained than the withdrawal of the two gentlemen from membership, which was probably not the issue desired by the council. It remains to be seen whether the Institute will in the face of this disappointment venture to remonstrate with the elder men who are candidates for the appointment of Surveyor to Bethlehem and Bridewell Hospitals.

CHATEAU NEAR ODESSA.

WE give illustrations (taken from the *Revue de l'Architecture et des Travaux Publics*) of the principal elevation, side elevation, sectional view, and ground and first floor plans of a chateau, near Odessa, Russia, designed in 1857, by M. Ruprich-Robert, a French architect, for Prince Manouk. The climate of Odessa is a very trying one for the architect—very cold in winter and hot in the summer; his ingenuity is taxed to provide a building suitable for the inclemency of one season and the great heat of another. The chief feature in this building is the great thickness of the walls, by which extremes of internal temperature are to a great extent avoided. M. Robert was not entrusted with the erection of the building, and his designs were, in some instances, departed from. For the style of the building, the client seems to have been responsible.

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The eighteenth annual meeting of members of the London Association of Foremen Engineers will be held on Saturday (to-morrow), at the City Terminus Hotel. The business of the annual meeting will be opened at 8 p.m., on the 7th proximo. The anniversary festival in celebration of the formation of the Society is appointed to take place in February.

THE CHURCHES OF LINDISFARNE.[*]

THE scheme of this work, we are forced to own, has been far better than its execution. It would also, in our opinion, have been better had the former been less comprehensive than it is. An archdeaconry must be uncommonly rich and select in its architecture if all the churches in it—old and new, ruined and restored — would bear illustration. As far as we can see, however, that of Lindisfarne does not differ from most others, in that no serious loss to the antiquary or lover of art would be sustained if a very large proportion of those with which Mr. Wilson has cumbered his pages should fall victims to friendly conflagrations. We regret also to say that the minority, which deserve a better fate, and there are many which do so conspicuously, are not presented to us by the photo-lithographs of this volume in at all an attractive manner. These dingy and blotted plates will neither convey much pleasure to the casual observer, nor much information as to the details of the buildings they represent to the architectural student. Nevertheless, Mr. Wilson has collected, with much patience, a mass of information with regard to the churches, with many of which he has been professionally connected; and we can safely recommend, in this respect, his example as one to be followed by other architects to whom the conduct of church restorations is committed, although we cannot speak as highly as we could wish of the manner in which he has carried out his excellent programme. Mr. Wilson dedicates his work to the memory of Lewis Rockalls Cottingham, who, he gratefully acknowledges, imbued him, when his pupil, with love and reverence for ecclesiastical antiquities. In the three preliminary chapters the author gives some interesting historical information about the See of Lindisfarne, which was founded A.D. 634. His account of the somewhat romantic and legendary history of the Saxon Bishopric, which has left few material relics behind, is very readable. We will, however, pass on to the second chapter, which treats of the period to which are due all the churches worth record in Mr. Wilson's long list. Lindisfarne Priory then arose in more than the glory of the Saxon Cathedral which had preceded it, and in 1080 William Cairleph founded there a convent of Benedictine monks, and abbeys were afterwards built in the district at Alnwick, Carham, and Newminster; priories at Holy Island, Hulme, and Brenckburn; ten religious houses in Berwick-upon-Tweed, and monastic establishments at Bamborough, Ambe, Warkworth, Holystone, and Alwinton, together with a host of churches.

The archdeaconry of Lindisfarne was founded in 1843, and is subdivided into the Rural Deaneries of Norham, Bamborough, Rothburg, Alnwick, and Morpeth. It is to be regretted that Mr. Wilson has not given a map of the district with his work, which would have rendered it easier to follow his description.

As might be expected, there are many points of correspondence in design to be found in these neighbouring churches, and it is the facility given for such comparisons which is the peculiar value of such a work as this which Mr. Wilson has produced. Thus, as he points out, several of the Early English chancels have a strongly marked resemblance, and some peculiarities are discoverable only in buildings on the property of Merton Colleges, proving the work in these cases to have been by an architect in their employ.

Remains of Saxon work are to be found in seven distinct places, in each of which a tower formed a portion of the work. Such features in later times seemed to have been universal, and used in that border county as places of refuge, and to have been therefore specially provided with a chamber in the first stage above the ground. Spires are but of rare occurrence, six examples only existing, and those only upon the sea-coast. This is a remarkable circumstance, as illustrating the strictly utilitarian principle which governed the use of such features, which are now introduced too randomwise, and without reference to the requirements of the position of buildings. Some very apposite remarks, which have a more general interest, are made by Mr. Wilson on the subject of masonry. He disputes the usual opinion that it is impossible to assign an approximate date to an ancient building, unless there are mouldings or tracery left; and he points out the features which he considers as distinguishing the work of masons in the successive centuries, which he asserts to be each characteristic and well defined.

Referring his reader to his perspective view of the church of S. Bartholomew, Whittingham (a reference, by the bye, difficult to make for want of a proper index), he calls attention to the difference in the masonry of the lower stage of the tower from that of the rest of the structure, an example of long and short quoins of Saxon work. The church of S. Philip and S. James, Rock, is selected as a characteristic specimen of Norman masonry, where the stones are 10in. to 12in. high, even, not larger than a man can lift, and laid in regular courses. Of this he says, " Eight centuries have rounded their edges at the interstices, and toned the amber sandstone down to a sad dove colour; but that is all, for the work of the Norman masons has stood well and flinches not, albeit the walls are filled in with rubble only."

A better masonry, of which a beautiful example exists in Brenckburn Priory Church, is distinctive of the Transition Norman style. This is excellent, firm, and compact. The stones are rather larger than those of the Norman masons, but like them laid in even, regular courses. " Intelligence and devotion," writes Mr. Wilson, " are to be read in every line of it. Whereas we feel, as we examine Norman masonry, that Saxon labourers carried the stones to and fro with protest and sighs, and perhaps with stripes from the Norman 'ingénieur,' their taskmaster. This work impresses us with its silent appearance of ready compliance. There is an aspect of calmness and acquiescence in it altogether captivating. We feel sure those who reared it believed they were doing so to the glory of the Most High." Here, verily, is a sermon upon stones, and one worth preaching.

" The Early English masonry," continues the author, " is also excellent and regular, but on a vast scale and massive. The narrow lancet lights left wide intervals of ashlar work, where all effect depended upon the finish of its execution. There is an air of austerity about it, but there is no shortcoming, nothing less, in fact, than a vigorous staunch perfection. But in the Decorated period, when cultivated taste began to luxuriate in exquisite combinations of geometrical figures for ornamentation, the workmanship of the masonry was well considered. In the length of a course, here and there we find a stone too unwieldy or too small. Where it is too large it projects into the course above it, and the level of the next one is obtained by the expedient of placing a smaller stone than the average upon the top of it, and where it is too short its full height is made up with a smaller one. By these patches a general appearance of regularity is maintained, and that appears to have been the extent of the aim. Where there was a surpassing window to come, full of gracious and deft lines of beauty—a song of praise, indeed—the Edwardian masons knew that the plain groundwork in which it was set would be but of small account.

" And so with Perpendicular work. In proportion as ornamentation increased in esteem, the perfection of the ashlar work was disregarded. The stones of this time are about twice as long as they are wide; they filled the space that was to be filled quickly; and all taste and intensity of feeling was lavished upon the beautiful windows, the sumptuous doorways, the laughing, leering, grotesque gargoyles, the dainty crocketing, the proud finials, the label terminations, the doughty corbels—the coigns of vantage, in a word, of the carver's art."

In modern work, smoothness, copied from Greek temples, came in vogue; but, after the revival of Gothic architecture—though at first the masons were left to themselves and worked as they had been taught — this smoothness was seen to be unsuited to it, and a kind of lazy, scabbled, or cat's-claw work was adopted—another mistake—to remedy that of the unsuitable smoothness. " But now," says Mr. Wilson, " we know that no part of an edifice is too inconsiderable to be passed over, and that to ensure beauty, fitness, and endurance every man employed upon it must execute his portion of the work with understanding and integrity."

With these excellent remarks, which we commend to our readers, we must now take leave for the moment of Mr. Wilson's useful, though not attractive volume, hoping shortly to return to it, in order to examine some of the more interesting examples of the churches which he has illustrated and described in its pages.

ARCHITECTURAL ASSOCIATION.

AT the usual fortnightly meeting, held on Friday evening last, the President, Mr. T. H. Watson, A.R.I.B.A., in the chair, the following gentlemen were elected members:— Messrs. J. Wheeler, C. E. S. Smith, H. Hall, W. Hammond, J. Harrison, and C. F. Chesterman.

Mr. Gilbert R. Redgrave then read the following paper

ON THE ARCHITECTURAL TREATMENT OF RUBBISH.

Wander where we will in nearly any direction out of London, we come finally to rather seedy market gardens, though " gardens " is indeed a misnomer for such vegetable workhouses, full of forlorn gooseberry bushes and worm-eaten cabbages. London, properly speaking, has no actual termination; it merges so gradually and indefinitely into its suburbs that there is no knowing when we are really out of it. We all know the process of getting out of it, however—the streets which become newer-looking, with the shops getting few and far between; then the terraces, with hungry, or, better, thirsty-looking public-houses at the corner; then some " detached villas," with apologies for gardens to them; and last of all, the building plots, and the placards " Dry rubbish may be shot here." " Dry rubbish?" Yes, the foundation of the London of the future—a city built upon rubbish, not always particularly " dry," by the bye, but good, honest rubbish. No need of describing it, I suppose. Every one has doubtless observed the oblique-lying strata of brick-ends and road-scrapings, oyster-shells and cinders, which a section of it presents to us. Truly a fine foundation—an admirable subsoil for dwellings calculated to last —well, ninety-nine years, at any rate. What a splendid study, moreover, for the antiquaries of future ages do these kitchen middens present us with! What a shell-fish loving people we shall be thought! Talk about burning down houses in China for the sake of roast pig, Mr. Lamb, why, it will be nothing to the way in which our descendants will pull down their houses (if they have not already fallen down) in order to dig for broken crockery and other traces of our civilization beneath the ruins! But, joking aside, it is a strange thing, even in the heart of the city, to find what accumulations of so-called " made-ground " have grown up on the sites of even our oldest buildings. I believe that a thickness of 20ft. of such deposits is by no means uncommon, and that if we go down to the virgin soil we pass at last through traces even of Roman London—the old thin bricks and Samian pottery. Now perhaps you may have already guessed what my paper is about, and you may think that I have brought you here under false pretences. I certainly chose an ambiguous title, and I did so intentionally, as I know that the Association cares little for practical papers (oh, oh). As I cannot treat upon any other than practical matters I must beg of you to bear with me in spite of my title. While on the subject of

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[*] " An Architectural Survey of the Churches in the Archdeaconry of Lindisfarne, in the County of Northumberland." By Frederick Richard Wilson, architect. Printed and photo-lithographed by M. & M. W. Lambert, Grey-street, Newcastle-upon-Tyne.

SUBSOIL,

I may mention that in the Building News a week or two back I saw a paragraph describing a quarrel (about these very rubbish heaps I have been alluding to) at Liverpool. A certain Dr. Stallard had pointed out in the *Lancet* that to collect "refuse, consisting of ashes, fish-bones, lobster-shells, cabbage-leaves, potato-parings, old door-mats, broken pottery, and the thousand other perishable articles which the sewers will not remove" cannot fail to make houses built on such a subsoil unhealthy. Of course his opinions were disputed by another member of his profession —Dr. Trench—who entirely controverts this view, and says, "As a physician and chemist, I assert that all organic materials—fish-bones, lobster-shells, old mats, and other perishable articles—will, if left undisturbed in a heap of ashes and macadam detritus, be speedily destroyed by eremacausis, without the evolution of any notable noxious gases, and that long before houses are built on the spot it will be a firm yet porous foundation, better suited for health than our boulder clay." In the face of two such opposite opinions the Liverpool Health Committee, feeling incompetent doubtless to settle the matter themselves, are about to request Professor Huxley to select two scientific men to inquire into the subject, and we shall shortly know, therefore, whether it is as unwise from a sanitary point of view as it is structurally, to build upon rubbish. I can speak from experience of the odours evolved from heaps of road scrapings in wet weather, and with all due repect for Dr. Trench, I am forced to state that they are, even if healthy, very unpleasant. In the natural course of things, having spoken of the subsoil we come next to the

FOUNDATIONS.

It is the fashion nowadays to specify concrete, though they used formerly to take no end of precaution in the way of York flags and piling for all buildings of importance, leaving the minor buildings to shift for themselves, and *shift* they certainly will if built upon these porous heaps. "Concrete" is a very enticing word, and carries an amazing sense of security with it. I can very vividly remember the site of some good houses, not a hundred miles from South Kensington—which are now probably letting from £300 to £400 a year. This site was (after having been a market-garden) a very muddy pond, on which the children of the neighbourhood made rafts of the contractors' plant, and swam sailing matches with the wheelbarrows. In course of time the ponds (which had been gravel pits) were filled in with rubbish, and ultimately gave place to "first-class family mansions," with stucco in front and stables at the back, which mansions in a very great degree owe their stability to concrete.

CONCRETE.

Well, we all know a great deal about this—a mixture which is buried as soon as it is made, and which is all the better for being quickly covered over and forgotten. If we believe our specifications, and have any faith that it consists of one part of stone lime, and six parts of clean ballast, we also probably believe that after a short time it gets very hard, more especially after it has been "thrown into the trenches from a height of from 10ft. to 12ft." and has been "well-rammed." Now, without mincing matters, I will tell you at once that "concrete" is one form of *rubbish* I am going to treat of architecturally. For all the practical value which we derive from nine-tenths of the lime concrete used in foundations, we might just as well use the ballast without the lime. In damp situations—and the trenches are rarely very dry—the chalk lime never sets at all, and if there is any running water it all gets washed out of the ballast in course of time and dissolved away. Lias lime and grey lime are certainly free from these objections, but they are, comparatively speaking, rarely used. The chief fault in the use of concrete is, however, the way in which it is mixed. We perhaps have had experience of Thames ballast—a mixture of mud, coal, chips, &c.—and we specify "gravel"— a rich loamy mixture of pebbles, well covered with a coating of clay. This material is "knocked together," as it is termed, or turned over with enough lime to colour it, and it is then thrown at once into the trenches. One value of the lime, which is perhaps overlooked, is that in heating and swelling, which it does *in situ*, it may cause the ballast to fill out the excavations. For the lime to have any real value in incorporating the pebbles it must have a clean hard surface to attach itself to, and it stands to reason that a film of clay is the worst surface for the lime to lay hold of. Again, the proportion of pebbles and sand in the concrete requires very careful adjustment, for if there is not enough sand to fill up the voids in the ballast the lime can never do it, and the concrete will be worthless. I have somewhere seen, I think in Laxton's "Price-Book," some very excellent rules for ascertaining the voids in ballast, and for arriving at the quantity of sand which should be used in a given quantity of shingle. The manner in which this was to be done was to fill a measure with washed shingle, and then to find how much dry sand could be shaken down into it. I am afraid that this precaution is very rarely taken. There is no doubt that the only way to make concrete properly is the way in which it is scarcely ever made—at least I have never seen it made so—viz., to mix the lime and sand first to the consistency of a liquid mortar, and then, in a subsequent operation by mechanical means, thoroughly to imbed the pebbles in this mixture. The old Roman concrete we hear so much about consisted mainly of such mortar, in which were imbedded the broken brick and stone, which were used in much larger fragments than we are in the habit of introducing into modern concrete. But not only in the manipulation of concrete ; I maintain that all our building trade customers are antiquated and old-fashioned, and that in spite of our advance in other matters we are terribly backward in all that pertains to the mechanical details and practice of the art of building. Concrete is one of the things which can be made a hundred-fold better by machinery than it can be by hand labour, and yet we have no simple and cheap contrivance, that I know of, for making concrete. Again, within the last thirty years Portland cement has come into pretty general use, and Portland cement concrete, or even concrete made from a mixture of Portland cement and grey lime, is infinitely better than simple lime concrete, and yet how little of it is used except for frame buildings and block-making. We have excellent materials at hand, and merely in order to save a little trouble in the mixing, or for the sake of cheapness, we compound with them substances which come fairly into the scope of an essay on rubbish. From the foundations we get next to the

FOOTINGS,

the domain of bricks and mortar, and here of all places in the building rubbish is rampant. Bricks, some hundred years ago, were carefully made of good clay and properly burnt in kilns—the use of wood for fuel and the confined atmosphere of the kilns gave them for the most part a red tint. In course of time, brickmakers—and particularly London brickmakers—found that they could do without kilns, and could make bricks of pretty nearly any loamy rubbish, burning them with breeze and small coal in heaps or clamps. The article produced in this way—and known in its highest perfection in the specifications of careful young architects as "good, sound, square, hard-burnt, grey stock bricks," but rarely seen in such perfection elsewhere—is a dirty yellow-coloured and very irregularly-shaped object, which is *the* building material of London. I have no fault to find with well-made bricks, either for their size, their colour, or their form, I think in all these respects a good brick is as handy and convenient an article as could well be contrived, and in many parts of the country bricks which are really good in all these particulars are manufactured at a price equal to or but slightly in excess of the price we are forced to pay for our London rubbish. Really, bricks get worse and worse every year, and in default of a fair competition or of any suitable standard to judge by, the only difficulty in passing materials on large works is to know how bad you may take them. I believe the acknowledged test of goodness will soon be that if a brick on being held up by one corner and vigorously shaken does not fall to pieces, it will be considered good enough to pass muster.

BRICKMAKING,

though perhaps hardly coming into the architect's province, deserves to be taken in hand by some one in authority. If we want good bricks for facing we have to get them from some distant part of the country, and to pay a long price for carriage ; and good stocks for common work are really quite out of the question. As London is a brick city, and can scarcely ever become any thing else, it seems sad to have to record the steady deterioration of our London bricks, and the worst feature in the case is that there seems to be scarcely any remedy for this evil. The reason of it is very evident, if we visit any of the centres of the brickmaking industry. One fact stares us everywhere in the face—want of capital, and, consequently, want of plant. Go to Hammersmith or Blackheath ; you will find the same state of things prevailing in nearly every brickfield you visit. You know the sort of thing I mean—a blind, broken-down old horse tramping round in the old-fashioned pug-mill or wash-mill, and a number of men and boys turning over the mud and cinders. None of the modern machinery for crushing and preparing the clay, no mechanical appliances for moulding and pressing the bricks ; and, lastly, the very rudest and worst plan imaginable for burning them. In many of the provincial towns the cry for better bricks has resulted in the introduction of patent kilns, the use of powerful grinding and moulding machinery, and the production of an infinitely better material than the old one, at about the same cost. I question whether a similar outcry would produce much effect in London. The brick trade is in the hands of such numbers of small men, who find a ready sale for any rubbish they can produce, and the builders can afford to laugh in their sleeves at any protest we can make about "stock" bricks. Moreover, we must remember the prejudices of the men and the power they possess to combine against anything they don't like—and a dislike of machine-made bricks is, I really think, born with the British bricklayer. We can all remember the Manchester strikes, which were brought about solely by the introduction of a better kind of brick. This may perhaps be the reason which prevents capitalists from embarking their money in the brick trade with a view to the London market, but I am convinced that before long we shall see an effort made, in some way or other, to introduce a better kind of brick than we are accustomed to, and whether the men submit tamely to the innovation or drive the new material out of the field, remains to be proved. The secret of the dislike of workmen to machine bricks is, I believe, their great weight ; and another reason I have heard alleged, but it seems an absurd one, is that it is easier to make good work with them, and consequently a master expects more work in a day out of a man using "patent" bricks. One would think that the difficulty of weight could soon be overcome, either by slightly reducing the size of the brick, or by making larger frogs in it. The lightness of our London "stocks" is due, of course, to the numerous interstices they contain from the burning away of the particles of slack and breeze which are incorporated with the clay previous to firing. A large frog is objected to, owing to the quantity of mortar it swallows up. While on the subject of brickmaking, perhaps a word or two about "patent" bricks may not be amiss. By "patent" bricks, I mean any kind of machine-made bricks, for whether the brick is so styled by the manufacturer or not, I find the men invariably speak of them as such. The most common plan of making bricks by machinery is to temper or prepare the clay in the pugmill, out of which it is squeezed in a continuous stream. This stream has a sectional size of the wet brick—10in. by 5in.—and it is divided into separate bricks by wires or other cutters at intervals of about 3¼in. The bricks thus roughly formed are sometimes burnt and sold in the rough as they are, or they may, when partially dry, undergo a heavy pressure in metal moulds, when they acquire the name of "pressed" bricks. Any process such as I have described, by which the clay after having been well tempered, is formed into bricks in the way stated, gives a machine-brick which can compare most favourably with the old hand-made ones ; but there is another mode of procedure which is now becoming very common, and which, though a simpler and cheaper plan of dealing with the clay, results in a much less trustworthy brick. This is known as the "dust process," owing to the manipulation of the clay in a dried and powdered state. In this case the clay, after it has been dug, is ground under edge-runners or any other suitable crushing-machine to a fine powder. This dry, or comparatively dry powder, is then submitted to very heavy pressure, by which means the particles of clay are so consolidated that the brick may be handled, and after very little drying placed in the kilns. By this process the toughness and tenacity of the clay is in a great measure lost; and bricks made in this way (particularly if they be slightly underburnt) are often broken by men tapping them with the trowel. The fracture, also, instead of presenting the streaky silky look of plastic clay, has a granular appearance, resembling sandstone. I have still to mention a variety of machine-brick which has been comparatively recently introduced, but which, for many reasons, deserves our attention—viz., bricks made of concrete, pressed in moulds. These bricks are of course unfired, and depend entirely for their strength on the cementing material with which they are compacted. In the neighbourhood of London we possess an admirable pit sand, with a very indifferent brick earth; and as London goes on spreading, we shall gradually enfold all our former brick-fields in the heart of the metropolis, and brick-burning will be out of the question. Some cheap and simple plan, then, of making concrete bricks, which will obviate the necessity of firing, and will enable us to make use of the gravel we dig out of our foundations, has still to be introduced, and will be a great advantage in London. I fear I have digressed sadly in order to speak of brickmaking, which is a subject which hardly concerns me. I was saying with reference to the footings of our buildings, that this was the place to look for bad bricks; and there seems to be a further tradition —that not only are all the bad bricks to go into the footings, but that the first course should be laid dry. Of course, if we think about the matter for a moment, it is obvious that not only should our footings be composed of bricks picked for their strength and hardness, but further that the cementing materials should be the best of their kind. And this brings me to the consideration of another description of rubbish—mortar.

(*To be continued.*)

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THE NEW POLICE SANITARY ORDER.

THE Chief Commissioner of Police has not been a moment too soon in the step he has just taken for the prevention of the spread of contagious disease in common lodging-houses. The order issued empowers the inspecting sergeant whose duty it is to visit such lodging-houses immediately on receiving notice of the occurrence of a case of fever or other illness, if the Poor Law medical officer and the relieving officer have not arrived, to direct the removal of all the lodgers from the sick room. He will then call upon the Poor Law relieving officer and obtain his order for the medical officer's attendance on the case. If these functionaries refuse or neglect to attend, and there is reason to apprehend the spread of any contagious disease or danger to the person who is ill, the inspecting sergeant is to request the nearest divisional surgeon of the police to attend, and will further accompany him and report the result without delay to head-quarters at Scotland-yard. He will also immediately afterwards see a guardian or an overseer of the poor, or the clerk of the guardians, and acquaint them with the absence or neglect of their officers, requesting at the same time an order to remove and admit the sick person to a hospital or the infirmary of the parish or union; and then, in default of such order, he is to apply to the nearest hospital which admits such cases for a like order. He is to act under the surgeon's advice as to directing the keeper of the lodging-house to take the necesssary steps for destroying or disinfecting blankets, bedding, &c. In disinfecting common lodging-houses or sick rooms in cases of fever or other contagious diseases, by means of carbolic acid, the following preparation is to be employed:—1. Carbolic powder; 2, liquid carbolic acid mixed with water in the under-mentioned proportions: carbolic acid, half a pint, water, two gallons; to be well shaken or stirred before using. All that comes from the sick room is to be received into a vessel containing three or four tablespoonfuls of carbolic powder or half a pint of the solution of carbolic acid. A shallow dish containing half a pound of the carbolic powder to two pounds of sand well wetted with the solution, is to be placed in each infected room, and renewed daily. Cloths dipped in the solution to be suspended in the passage immediately outside the door of the room. The room to be ventilated by opening both sashes of the window. The door to be opened as little as possible. Useless woollen and other draperies to be cleared out of the room when the symptoms first make their appearance. Foul bedclothing or body linen to be well scalded with boiling water immediately on its removal from contact with the patient, then to be dipped in the solution diluted with three parts of water, and afterwards wrung out in pure water. Every part of the house to be sprinkled with the solution twice daily, and at least half a gallon of the solution to be poured down sinks, drains, &c., once a day. All glasses, cups, and other vessels to be carefully cleaned before being used by others. All unpaved earth in back-yards or around infected dwellings to be well moistened with the solution daily. In case of death the body to be wrapped in a sheet kept wetted with the solution, and a pound of the powder to be spread over the bottom of the coffin. On the death or removal of the patient the apartment to be fumigated with sulphur in the following manner:—The chimney being stopped up and the doors and windows closed, four ounces of common sulphur are to be placed in a shallow iron vessel or on a shovel, ignited, and allowed to burn out. The person who ignites the sulphur to leave the room immediately. The bed, mattress, and carpet, and all woollen articles of body clothing and bed clothing, to be left in the room during the fumigation. The walls and ceilings of the rooms, passages, and staircases to be washed and limewashed. Half a pint of undiluted liquid carbolic acid to be mixed with each bucketful of limewash, During the prevalence of epidemic carbolic acid soap should be used for all purposes in lieu of the ordinary soap. Calvert's carbolic acid to be always used.

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Building Intelligence.

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CHURCHES AND CHAPELS.

Allhallows, Lombard street. This church, which has been closed for several months, was reopened on Friday afternoon. The present building was reconstructed in 1694 by Sir Christopher Wren, and its main features have been faithfully preserved in the present restorations. The west galleries have been removed, and also the room at the north-west corner, throwing open the fine vestibule, the west window, and the groined ceiling. The wall and ceiling decorations have been carefully studied. On the ceiling, the corner medallions represent the Evangelists, the central subject being a figure of our Lord in glory. The more salient parts of the cornice mouldings are brought out in gold and colour. The faces of the groins under the main ceiling have foliated enrichments, with medallions, representing at the east and west ends the four great prophets; the side medallions, patriarchs and kings. Arabesque decoration is carried round the window arches and above the wood panelling on either side of the church. The window at the north side of the chancel represents the Marriage at Cana in Galilee. On the south side of the church, commencing from the organ, the subjects of the four windows are:—1. Christ Sitting in the Temple. 2. Christ Healing the Blind. 3. The Good Samaritan. 4. The Three Maries at the Sepulchre. The west end has a striking representation of the Crucifixion. On the north side, commencing from the vestry, the subjects of the four windows are:—1. The Wise Men's Offering. 2. Christ Raising the Widow's Son. 3. S. Peter Walking on the Sea. 4. The Entombment, The cost of the restorations has been £4,000. The architects are Messrs. Francis, and the contractors Messrs. Dove.

Axminster.—On Christmas Eve the parish church of SS. Mary and John the Baptist, Axminster, was reopened, after restoration at a cost of £1,200. It consists of a central tower, 72ft. high, between the nave and chancel; and in old times transepts projected north and south from the tower. These no longer exist, and the aisles run straight through from end to end, a length of 97ft. The south aisle is partly modern, being erected in 1800, and took the place of "Drake's Chantry." The north aisle is (as well as the greater portion of the church) of Perpendicular date. The restoration has comprised the removal of the old galleries, the reseating of the church throughout, and some external restoration. The architect is Mr. Edward Ashworth, of Exeter; the contractor Mr. John Digby, of Ottery S. Mary.

Petertavy.—The little church of S. Peter's Tavy, in the confines of Dartmoor, was reopened on December 29, after having undergone considerable restoration under the superintendence of the rector, the Rev. T. Gibbons. The building consists of chancel, nave, north aisle, chancel aisle, south transept, western tower and south porch. The restoration includes new roofing, pointing the walls, cleaning all the stonework, and substituting neat benches of pitch pine for the old pews.

BUILDINGS.

Bradford.—New premises are to be erected for the Yorkshire Banking Company at Bradford. The design has been prepared in the French-Italian style by Messrs. Lockwood & Mawson, Bradford. The principal feature of the design is in the angle formed by the two streets, where the grand entrance to the bank is placed. Coupled fluted Corinthian columns, supporting a pediment, form a deeply-recessed portico, in the centre of which is the door-way. Above the portico is a boldly-projecting three-light window, with columns of the same order, carrying a smaller pediment, the tympana of both pediments filled in with carved work. Above this, again, is a coupled two-light window, with shafts, then a rich frieze cornice and parapet, flanked by ornaments at each angle, terminated by finials, and from the centre rises a lofty Mansard roof, surmounted with iron cresting and finial, the front of the roof enriched with a kind of dormer, carrying figures. The lower story of the bank is rusticated up to the first floor, the same feature marking each of the angles in Bank-street and New Tyrrel-street, the rustication being continued up to the frieze both there and on each side of the principal entrance. The banking apartments are on the ground floor, lighted by lofty square-headed windows, masks forming the keystone to the window heads. The first floor windows are terminated with circular pediments, and have balconies, and on the second floor the windows are coupled. A bold cornice and rich frieze is carried round the building, and above that again is the parapet forming square panels, filled in with pateræ. A distinctive character is given to each angle of the building as well as to the central portion. The line of the parapet is broken by chimney stacks of bold treatment and by handsome ornamental terminals, imparting a feature of unity to the whole design. In the tympanum over the central doorway are the arms of Leeds and Bradford. The cost of the building is estimated at £10,000.

Leek.—The Alsop Memorial Hospital has recently been opened to the public here. The following is a description of the arrangements:—The chief feature is the two large wards, each 27ft. by 14ft., which are intended for four beds each; that of the males being on the ground floor, and the females immediately over it on the chamber floor. A corridor the whole length of the ward separates it on both floors from the men's and women's special wards (for two beds each), the operating room and the baths, W.Cs. and lavatories; and all this portion of the building is divided by the hall and landing over it from the more domestic department, comprising the kitchen, scullery, pantry, and waiting-room for patients and visitors; and above these are three bedrooms for nurses and assistants and the linen closet; there is also a commodious bedroom and store-room lighted by dormer lights in the roof. The mortuary is a detached building in the yard on the north side, and the washhouse and other out-offices are also detached. The hospital is warmed throughout by the hot-air apparatus of Messrs. Haden & Son, of Trowbridge, placed in the basement story of the building. The architect has given particular attention to the plan of ventilation. The passage of an uninterrupted stream of fresh air through the wards being secured, warmed by the apparatus in winter and in summer reduced to a temperature at least ten degrees lower than that of the external atmosphere; the vitiated air is drawn off by regulated outlets into separate flues in the chimneys. The good old fashion of open fireplaces has been retained in each room, in addition to the warming apparatus. The building is of red brick, relieved by plain and moulded stone strings, and the jambs, mullions, and heads of the windows are also of stone. All the windows have pointed arches in coloured brick and stone, with label mouldings, the spandrils being filled with pierced traceried stone heads or dark-coloured tiles. The roofs are covered with plain and ornamental tiles, with stone copings at the gables, finished by iron or carved stone finials. The woodwork in the interior is varnished without staining, the figure being preserved. The walls are coloured throughout in judiciously-selected tints of quiet tone; those in the wards having a skirting of three courses of white porcelain-faced bricks instead of the ordinary woodwork, as being capable of more thorough cleansing in the necessarily frequent washing of the floor, &c. The fireplaces have mantelpieces of moulded stone; the jambs being filled with pictorial tiles and the hearths laid with glazed dark-coloured tiles. The architect was Mr. Sugden, of Leek, and the work has been executed, under his superintendence, by Messrs. Nadin, Hudson, & Philips; the stone carving by Messrs. Williams, of Manchester.

A DISAPPOINTMENT.

We have announced the appearance of two series of illustrations for the present volume, which we are sure will gratify our readers, viz., "Monuments of Art" and "Albert Dürer's Engravings." We had hoped to have commenced the former in the present number, and in our next to have given the first of the Dürer series. The dull weather has, however, completely thwarted us. The process, photo-litho., by which these illustrations are produced, requires bright weather for its successful accomplishment, and until it comes we must claim our readers' indulgence.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR. 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. Heywood, P. A. Rayner, J. G. Bland, M. Munro, Sherry, Wednesbury Local Board, R. G. Thomas, T. Drew, J. S. Bradbury, W. Fogerty, H. H. Statham, W. MacFarlane & Co., H. McMillan, Gilson Martin, J. T. Ryan, P. Auld, H. G. W. D., Gilbert Redgrave.

M. Carpentier.—Received. Will reply by post.

Sidney Robjohn.—Thanks.

Edmund Winter.—Received. You need not have put us to the expense of triple postage.

D. A. Walter.—Such a work, if well done, ought to sell. Would not the photo-lithographic process suit you?

Correspondence.

PERCENTAGERS AND ARCHITECTS.

(*To the Editor of the* Building News.)

Sir,—We have all heard of people who while perfectly sane, and even displaying a high degree of intellectual power in regard to some subjects, are crazy on one point, at the mere mention of which they are liable to physical or mental convulsions of an alarming nature. I am afraid Mr. Garbett comes under this category. We are much indebted to him for many of his writings; and he has given us more good sense and sound reasoning about the theory of architecture in his little work on the "Principles of Design" than are to be found in most books I know of. But the percentage system of payment is to him like the red rag to a bull, and seems to goad him to a sort of divine fury which far overruns the traditional boundary between the sublime and the ridiculous.

I will say at once that I think the percentage system a wrong principle of payment, inasmuch as in theory of course it encourages outlay, and lays architects open to the charge of being anxious to see as much money as possible spent on a building. But I am unable to see how this differs in principle from Mr. Garbett's proposition of so much per square of flooring. It is only the same thing under a different name; the architect may just as well be supposed under that system to be anxious to induce all his clients to build bigger rooms than necessary in order that he may pocket more money. The only system that would not be open to the same objections would be that of each architect charging, as other artists now do, whatever he considers the value of his work to be, or whatever he thinks he can induce the public to rate it at. There would be certain advantages in this plan; especially that it would enable those upon whom great demands are made to follow the example of painters and sculptors, and raise their terms instead of accepting on the same terms more work than they can possibly look after, and getting it done by proxy. But it is a very hazardous thing, especially for young professional men, to attempt to break down a long-established custom of this kind; misunderstanding, and perhaps loss of employment, are pretty sure to follow such an attempt, unless made by the profession *en masse*. Nor is the matter of anything like the importance which Mr. Garbett assumes it to be. There are probably plenty among the more talented members of the profession who would concur in thinking the payment question a very subordinate one, and whose anxiety is more to do something worthy of themselves and of their art than to higgle about how they shall be paid. When Mr. Garbett insinuates that no one who is willing to be paid on the present system, and make the best of it, can have any true feeling for the art of architecture, he says what he must know to be nonsense; and when he stigmatizes those who do so as robbers of the public he says what is as uncharitable and uncourteous as it is in many cases totally untrue. A similar system runs through many other professions on which no stigma is supposed to be cast thereby. Mr. Froude said, in his inaugural address at S. Andrew's University, that the system of payment for literary work was altogether wrong, as it was paid for according to the length of an article instead of its merit. This is true in one way; but as a matter of business the present system is simple and saves much trouble; and does any one suppose that because literary men are so paid for their articles, therefore there are none amongst them who are totally above the temptation of writing for money, or of spinning out an article to make a guinea or two more out of it? The fact is that, human nature being what it is, there will always be, in all trades or professions, a numerical majority of inferior men whose chief object will be to make as much money as possible; and these will do the same whatever system of payment is in use; and there will also always be, we may hope, a numerical minority of superior men whose main object is to do their work in the world as well and honestly as possible, and be "content with their wages," provided they can feel that they have done their best. And I believe there is as large a proportion of this class in the architectural profession as in any other at present existing among us.

Not having the honour to be a member of the Institute, I am not concerned to defend that body, which is well able to take care of itself, against Mr. Garbett's prophetic ravings, which they would probably not regard as worth a serious reply. But it is a pity, on Mr. Garbett's own account, that he cannot see the bad taste of indulging in such unmannerly and over-wrought diatribes against respectable people.—I am, &c.,

H. H. Statham.

A PLEA FOR THE PERCENTAGERS.

Sir,—"E. L. G.'s" letters began about the ventilation question, a very important subject doubtless, but hardly likely to be cleared up by discussion in such a temper as he manifests. His allusion to the Palace of Westminster as "rubbish," and the failure of its system of ventilation as an instance of the botchery of the British architect, is particularly unjust, as everyone knows that department was taken out of the architect's hands and placed in the hands of a scientific theorist not paid on the percentage system at all. But soon the original question disappeared, and "E. L. G." dilates almost exclusively on the evils of the latter system, and the legal enactments he would have made to put it down.

Indeed it strikes me that the Building News is hardly the proper organ in which to propound such views. It has little or no influence with the legislative "powers that be." Architects, as a body, have no political influence but one solitary M.P. belonging to that profession. Why does not "E. L. G." advocate these views in the *Times*, already sufficiently disposed to pour contempt on the craft and its usages? Or why, above all, does not he organize a deputation to Mr. Ayrton, who has not only the will but the power to bring in a bill for the proper regulation of architects' fees, and the utter abolition of their unlawful and immoral system of percentage? Perhaps, after all, "E. L. G." is only joking, and does not mean it.

When it is mildly suggested by one of the unhappy percentagers that "E. L. G." ought in all fairness to show us some better system before we give up what is at present the only mode we have of getting our fees determined, "E. L. G." flies into a rage, and very unfairly retorts the question on the inquirer, "What! you call yourself an architect (which means, being interpreted a *deviser*), and you are incapable of devising how you are to be paid? Out upon you and your Institute for a set of incapables." Excuse us, "E. L. G.," but the onus does not rest upon those who are satisfied with the system to devise a better one, but on you who find fault with it. And your flying into a rage proves very clearly that you find it much easier to pour forth invectives against the existing system than to point out any other. It is always much easier to pull down than to build up. However, it is easy enough to "devise" other systems, and I will undertake to devise half a dozen in as many half-hours, premising that they will be no better, but much worse than the existing system; but if "E. L. G." (who thinks nothing can be worse than the percentage system) likes any of them better, he ought to show us, what is the real difficulty—how we are to get the public to accept the new system so devised. When it is accepted I suppose "E. L. G." will have it enacted that anybody who will not pay his architect according to it shall be punished by "fine, imprisonment, or flogging."

There may have been in former ages architects who practised the art for the pure love of it, and on such high æsthetic and ethereal principles as utterly to disregard such low considerations as the amount of their fees. I suppose it is one of these that we sometimes see depicted in the vignettes to architectural works, in monkish attire, working away with a pair of compasses at the head of a geometrical window, on a sheet of paper, not mounted, but loose and curling in a very picturesque but unbusiness-like manner. If such as these ever existed they are now, at any rate, to be numbered amongst the "extinct animals." There are some who affect similar principles nowadays, and profess to look down on others as "making a trade of architecture." But if they mean that they do not make a trade of it as well or more, I don't believe them. Whenever a Parliamentary candidate professes thoroughly independent principles, that he despises place-hunting and patronage, and seeks to enter the House for purely patriotic considerations, I always expect such a one, if elected, to accept the first berth that is offered him. And when I hear some architects professing a lofty contempt for others who endeavour to frame their specifications, estimates contracts, and accounts on strict business principles, I always expect to find the accounts and fees of the former to be infinitely more unreasonable and exorbitant. In putting forward the following systems, therefore, I profess none of these high æsthetic principles, but simply aim at "making a trade of architecture," and what is much to be desired, a good paying trade too.

First, in deference to "E. L. G.'s" anxiety for the conservation of our ancient monuments, which now suffer so much at the hands of percentage-paid restorers.

Let there be in each diocese appointed a chief architect-antiquary, and a competent staff of subordinates, who shall have charge of the cathedral and all other ancient edifices, and whose duty it shall be carefully to patch up in their places all remains of antiquity and preserve them from restoration. To take special care of all such things as rood-screens, piscinæ aumbries, hagioscopes, confessionals, pixes, and other remnants of the superstitions with which the Church was overlaid in the Middle Ages (notwithstanding that she has for three centuries past rejected them as "dangerous deceits"), and to see that the churches are made as useless as possible for the congregations of the present day, who audaciously expect to be permitted to see and hear, and who if they cannot do that in church will go to dissenting chapels for the purpose. As the duties of this functionary are so important, his salary to be at least equal to that of the bishop of the diocese. In fact, as some notorious church restorers paid on the percentage system manage to make as good incomes, less could not be offered. The benefits of this system would be that the funds now so wickedly expended in destructive restorations would all go into the pockets of the chief architect and his subordinates, and as little "outlay" as possible be incurred in disturbing the ancient works.

Second, if that will not do to meet the general requirements, suppose we have it arranged that architects are to get their fees beforehand, like barristers. A client, for instance, on sending any instructions to an architect (say for a house) is to inclose a fee, which the architect may return if not considered sufficient, but if accepted, and the client soon after abandons the idea of building, the architect to keep the fee notwithstanding. This would assimilate the profession to the noble profession of the bar, which is so distinguished for high principle, &c., and which exerts such a beneficial influence on all who come into contact with it. The wise regulation about keeping the fee whether the work goes on or not would enable architects to take much less fees for works carried out than they get at present, as the cases of abandonment are so frequent.

Third, let a table of fees and charges for each distinct service be constructed, and taxing officers appointed to adjust architects' bills like those of solicitors. The following is a specimen of how it might be framed:—

	£	s.	d.
Perusing instructions from client..	0	6	8
Do. if long........................	0	13	4
Letter in reply....................	0	3	6
Do., if voluminous ......per page	0	6	8
Conference with client............	1	1	0
Do., if long.......................	2	2	0
Designs per sheet as follows:—			
Royal size................each	1	1	0
Imperial do. ....do.	1	11	6
Double elephant ....do.	2	2	0
Antiquarian................do.	3	3	0
Perspectives plain..per square foot	0	10	6
Do., if coloured..................	1	1	0
Reports, specifications, &c., per folio	0	5	0

And so on. Now then, let not "E. L. G." say any longer architects are "incapable of devising" any other system of charge than the hated percentage system.

> "I can call spirits from the vasty deep."
> "But will they come when you do call for them?"

There are two parties to be consulted, and at present the most unreasonable and least manageable of them is the public, and let "E. L. G.," therefore, address his future diatribes to it, or some organ capable of influencing its opinion.

And here let me call attention to a singular piece of disingenuous reasoning on "E. L. G.'s" part. "All other men's work," he says, "to be paid for by measurement, and then so much per cent. of what is paid for their work is to be the pay for our devising of the same." Now this is an attempt to put the architect in an exceptional position as compared with other workers which he really does not occupy. The builder is paid by measurement it is true, but how is the *price* obtained? Refer to Laxton, or, if you will, to a useful little book by "E. L. G." himself, and you will find, "The following prices are calculated at so much prime cost of materials and labour *and* 15 *per cent. profit!*" Where is the contrast now, except that the builder gets three times the percentage of the architect? Both are "percentagers" beyond doubt, and so is the surveyor; so come now, "E. L. G.," is this fair? Anybody else might be excused for ignorance, but with you who know the whole "art and mystery" it is inexcusable.

But architects are only a small and comparatively insignificant portion of the community to whom his denunciations apply. If a proprietor, instead of investing in building, chooses to invest in stock of any kind, he has to pay in addition "brokerage so much per cent." If he bids for an article at an auction, he has to pay in addition to the price 5 per cent. to the auctioneer. The percentagers' (as "E. L. G." would say, like the devil's) name is legion, for they are many. Land and house agents, ship brokers, corn factors, and a vast number of other honest callings, according to him, should be punished in the manner aforesaid, as well as architects. And can we stop here? How are her Majesty the Queen and all the Royal family, the ministers, the judges, the army and navy, kept up? Horrible to tell, by percentages. Income tax, 6d. in the pound means simply 2½ per cent. But, says "E. L. G.," this is on income, not outlay. Well, then, if I want to lay out 2s. 6d. on a pound of tea, have I not to pay 6d. per lb., or about 15 per cent. on the outlay, to maintain the dignities before mentioned? If I determine to expend £100 a year of my income in renting a house I have to pay about 25 per cent. in addition for rates and taxes. And is it not too bad that poor architects, who have to pay all these percentages as they fancied for law, order, and justice, are to be told that to expect any percentages for their own work is an offence to be punished with fine, imprisonment, &c.? It is well for them that "E. L. G." has not the power to enforce these enactments, savouring so strongly of mediæval persecutions and the holy office.

It is quite true that Lord Kenyon, in 1793, with about as much reason as was recently displayed by Mr. Baron Bramwell in another architect's case, ruled "that a percentage could not be recovered." Peace be with him! many and sundry percentages have been recovered since, and the percentage system seems to be the one thing juries are determined to uphold. The arguments of "E. L. G.," and many others beside, and Lord Kenyon's ruling into the bargain, were all put in a subsequent case tried before Lord Ellenborough in 1817, and resulted in a verdict for the architect for the exact amount of 5 per cent. on the outlay. And since then no one has been able successfully to question it as the ordinary and legitimate mode of remunerating an architect. It is one of those things, to alter an expression of Lord Dundreary's, that "every fellow can understand." It is sometimes objected to it that it should not be applied equally to plain and enriched buildings, but there is no force in this objection. If a building be plain it costs less, and so the architect gets less than he would for a more enriched building. It would be different if the percentage were calculated on the *cubic content* instead of the cost. But being on the latter no injustice is wrought. There may be cases of frequent repetition in large buildings such as to furnish good reasons for reducing the rate, as there may be also reasons for increasing it, but depend upon it, no other system would work so well as a whole, and the public generally will never have any other, only it should be the business of the Institute and other such societies accurately to define the duties included in it, and fairly to apportion it for every stage in the work. And let every architect see that he gives good value for it, "a fair day's work for a fair day's wage," and he will reap the benefits in increase of business and consequent increase of emolument on the sound and rational, though much maligned, "percentage system."—I am, &c.

An Out-and-Out Percentager.

THE AIR AND HEALTH QUESTION.

Sir,—I am glad to find from "E. L. G.'s" letter on "Percentagers and Architects," in your paper of 30th Dec., that when I want to build a house, I can have it thoroughly ventilated at the very reasonable rate of 10s. per square of flooring, for the plan. At present I am one of the "wise men" who live in houses which other men build for them; but having lately seen several newly built houses, on which no expense seemed to have been spared in other respects, but on which effective ventilation is entirely ignored, I have taken an interest in the question why this should be. I do not see that the fact that architects are paid by percentages should affect the matter, since, if it is assumed that an architect's chief object is to enlarge as much as possible the outlay on which his percentage is calculated, he may do so as well or better, in the means of securing good ventilation as in any other way. My impression is that most men who build houses for their own use have not studied the question of ventilation sufficiently to know its importance, or if they have looked into it, have found so many irreconcilable differences of opinion, not only on the details, but on the principles on which good ventilation is said to depend, by the leaders of opinion on the subject, that they have no faith in any of the systems recommended. And in either case they have gone to the best architect in their neighbourhood, and considered themselves safe in leaving the question to his discretion. Of late years, however, the importance of good ventilation has come to be better appreciated, and I feel sure that if any system by which a house can be thoroughly ventilated, without sacrificing other comforts and conveniences, is made public, architects, whether paid by percentages or otherwise, will find it to their interest to make proper provision for it. Reading everything I can lay my hands on that refers to the means of obtaining perfect ventilation, I have as yet found no practical system for ventilating and heating a house laid down by scientific men, of which both principles and details are not contradicted by other writers of equal authority; and under these circumstances I am not surprised that houses continue to be built as they are. Of those who know good ventilation to be necessary, a very large proportion believe it to be unattainable under any known system. Let "E. L. G." or any other writer on the subject, proves beyond question, that its benefits are attainable without relative disadvantages, and whether designed at a percentage, or at 10s. per square of flooring, the "Air and Health Question" will find that attention which it deserves.

J. G.

NEW MASONIC HALL GLASGOW.

Sir,—I observed at p. 492 in your last number a notice anent the New Hall of S. John's-lodge, Glasgow, in which are several mistakes. I am not aware that said Hall really stands "due east and west," for upon consulting a large new map of Glasgow I find that, as it fronts Buchanan street, it must have a considerable dip towards the south at the east end. Then the chair for the Senior Warden is at the *west* end, not at the "east;" and there is no "Grand," but a *Junior* Warden. However these are only small verbal errors: the chief point of interest is the Hall and its decorations, which, in my opinion, are anything but satisfactory. Freemasonry delights in holding by what it calls "the ancient landmarks," or established usage—these, however, have in this case been discarded, and instead of the approved emblems, symbols, &c., being employed in an able, appropriate, artistic, and, if possible, improved manner, we find only a paltry, gaudy copy of an Egyptian tomb!

What on earth an Egyptian tomb, or temple either for that matter, has to do with a Freemasonic-hall I know not, more especially the hall of a lodge which prides itself upon being such a purely *craft* lodge. Were the S. John's-lodge intending to revive the "Egyptian Masonry" of the notorious Cagliostro, which flourished for a short time about eighty years ago, or to practise the rite of Misraim, or some similar tomfoolery, we might see cause why Egyptian symbolism should be copied, and gilded wooden sphinxes, &c., introduced, but as we understand such is not their intention we must consider their innovation a great mistake. Even the manner of carrying out the work is anything but good; the cornice is all executed in paint, and is most unnecessarily broken into in six different places, to the height of about nine inches, by six large ventilators, so shown off as if each one had a large poster on its breast with the inscription "I am a ventilator!" Then as a representation of "chaos," we have the circles of a shooting-target with a thunderbolt striking the bull's eye; and for "light" we find a large yellow gowan, or "sun," about two feet in diameter pasted up against a lot of dirty muslin, alias "clouds," I suppose, the effect being rather more allied to the ludicrous than the sublime. So much for masonic artistic decoration and architectural forethought and propriety in Glasgow!

I sincerely hope that any such sham gingerbread work will not be again attempted in Glasgow. It may perhaps please the vulgar and ignorant to see a lot of gaudy flaming colour stuck up all around them, but any person of good taste is sure to be disappointed.

The proper plan to do would have been to improve upon S. Mark's, just as the old thirteenth-century cathedral builders did upon the works of their predecessors: any paltry copying, or attempted revival of an old dead style, is seldom satisfactory. We might as well go back to the old Egyptian style in the carriage of our goods.—I am, &c.,

Masonicus.

STYDD CHAPEL.

Sir,—No doubt others as well as myself were interested in the description in your last number of the ancient little edifice called Stydd Chapel. Those who reside in the locality would do well in caring for the fragments that may occasionally get dislodged from the building. In going round this chapel a few months ago I observed a fragment of stone, almost lost to sight amid a luxuriant crop of nettles, which puzzled the old sexton, my guide, to account for; but after clearing away the nettles I soon discovered that it was the apex of the coping at the east end, pushed off by the vigorous old ivy. Provision is made in the centre of this stone for a cross. I hope before long this fragment may be restored to its place.—I am, Sir, &c.,

Preston, Jan. 3, 1871. P. B. B.

◆

Intercommunication.

◆

QUESTIONS.

[2081] BOOKS.—Would "E. L. G." kindly inform me of the price and the publisher's name of Sir W. S. Harris's work on "Thunderstorms," written in 1827, and of the pamphlet by same author, published 1847, and referred to by "E. L. G." in "replies" column, Building News, Dec. 9, 1870? and oblige—Boanerges.

[2082] DRYING BOARDS.—I shall be glad to know the best method of drying boards by the heat from the waste steam pipe which now passes from the engine cylinders to the chimney. Also, will mere steam dry boards, supposing it turned direct among the boards from the waste pipes? Or if not, will it have a good preparatory effect by causing the boards to dry more quickly when exposed either to hot air or to sun and wind afterwards?—K. K

[2083] HIGGS' PROCESS.—In the Act of Parliament for the improvement, &c., of the river Lee, 1868, the 101st clause refers to "Higgs' Process" for purifying the sewerage water passing into the said river. Would you kindly advise as to the nature of "Higgs'" process on this matter of purification, &c.? Can any reader give any information respecting this process?—G. W. M.

[2084] DESTRUCTION OF WOOD.—I have just been inspecting a house in which the woodwork is full of small perforations usually called wormholes. This prevails to a great extent in various parts of the building; it also affects the furniture, which is being rapidly destroyed. I should be glad if any of your readers could explain the cause and suggest a remedy. It seems to attack equally beech, oak, mahogany, and deal.—B.

[2085] ARCHIMEDIAN SCREW VENTILATORS.—Some information as to the properties of this article and the amount of air extracted in a given time according to the size, the various points to be considered in its application, &c., would oblige.—Z.

[2086] ARCHITECTS' CUSTOMS AND RIGHTS.—May I beg the favour of information as to the custom and rights of architects and surveyors under the following circumstances?—A survey, valuation, and report has to be made of one person's third interest in property situated in three different localities. No. 1. Ten houses, say of the total value of £4,400. No. 2. Five houses, say of the total value of £260. No. 3. Land, say of the total value of £160. Now the question is, what percentage should be charged for such survey, valuation, and report; and whether estimated upon the amount of the valuation of the three properties together, or upon each of them separately; and whether upon the whole amount of the valuations or upon the one-third interest only in each case—No. 1, say, £1,350; No. 2, say, £80; No. 3, say £50; and what additional amount, if any, for correspondence, interviews, travelling expenses, &c.—ARCHITECT AND SURVEYOR.

REPLIES.

[2075] TO PRACTICAL CLERKS OF WORKS.—In reply to "Old Foreman's" questions on Dec. 23, as to walls built 2ft. 9in. thick with 7in. of brickwork inside, I should have thought "Old Foreman" would have known without asking any one that brickwork does not settle near so much as flintwork, and especially if the former is built in dry weather, so that the natural and evident consequences are, the brickwork stands firm and flintwork settles, and the walls have thereby a tendency to settle outwards more or less, according to height, which "Old Foreman" did not give. Also the stone quoins will be a little displaced in consequence of the weight coming down upon the long bonded or stretching quoins, which, so to speak, will act as a leverage and force them out without they are held in position by iron ties or bond of some kind, which "Old Foreman" appears to be short of.—I. O. U.

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WATER SUPPLY AND SANITARY MATTERS.

SANITARY NEGLECT.—The thickly populated mining town of Camborne, Cornwall, has for some time had an extraordinary death-rate, in consequence of the spread of fever, and the public schools have had to be closed with a view to check contagion. Dr. Buchanan, a Government inspector, has just issued his report concerning the sanitary condition of the town, which is represented as exceedingly bad, and calculated to spread any epidemic. Nuisances abound, overcrowding prevails, and, practically, there is no drainage. The water supply has been very bad and deficient, and it remains to be seen what result will be brought about by a private company. Dr. Buchanan insists that nothing will meet the wants of the town but the adoption of the Local Government Act, which has been strongly opposed by the bulk of the inhabitants.

SANITARY SCIENCE AT COLCHESTER.—Dr. Bree, the senior physician at the Essex and Colchester Hospital, writes as follows to a medical contemporary:—"Sir,—Every week you report the spread of scarlet fever, small pox, and other contagious diseases. Your correspondents write to you very learned letters about the mode in which such diseases spread, but few of them notice the fact that the so-called sanitary reformers and inspectors have themselves very much to blame. In this town of Colchester the Board of Guardians have erected a hospital for the reception of contagious diseases, which has the following admirable facilities for spreading the disease among the inhabitants:—1. It is thrust in, as it were, between the east side of the workhouse and a row of cottages, eighteen in number, inhabited by poor people, the end of the pest-house being 40ft. from the nearest cottage. Beyond this row of cottages is the public road, in a hollow, and rising above the road are the gardens of one of the most populous parts of Colchester. 2. Abutting on the pest-house on the west is the playground of the poor children of the union; and close to it is the pay-room, where the poor congregate to get their allowance. 3. To the north, about 100 yards or so from the pest-house, are the public water-works, with a large open tank, which supplies the town with water. Beyond, half a mile off, is the Idiot Asylum, but there is hardly any break in the intermediate houses. 4. To the south there is a continuous street of thickly-inhabited houses, communicating with the principal thoroughfare of Colchester. After this pest-house had been raised above its foundation, the inhabitants of the cottages demurred, through their landlord, to the erection of such a building within twelve yards of their bedroom windows, and the Guardians requested the opinion of myself and the medical officer of the union as to the eligibility of the site, and we both condemned it, but it appears that a non-medical Poor-Law Commissioner had approved the site, and the Guardians determined, spite of our opinion, to continue the building. The subject was brought before the Commissioners of Lighting and Paving, and in consequence of their representation, the Guardians requested the Poor-Law Board to send down a sanitary inspector. Of course the sanitary inspector would not disturb the site sanctioned by one of his Board, and so the building went on. The Commissioners of Lighting and Paving now applied to the Sanitary Board of the Privy Council, forwarding to them a memorial signed by seventy immediate inhabitants. The Privy Council, however, wrote to say that the place having been inspected by a sanitary officer of the Poor-Law Board, they declined to interfere. Now Dr. W. Budd has proved, and every educated medical man of experience knows, that infectious diseases are conveyed by atmospheric currents from the sick room to healthy places all around them to a distance, according to Dr. Budd's deduction, of at least a mile and a half. But instead of studying the practical, our so-called sanitary reformers are enveloping themselves in a fog of microscopic gemmules, which they think may probably be the *vera causa* of infection; and while they are fighting about the gemmules they permit manufactories of contagion to be erected amid the residences of the helpless poor. The effect of the building at Colchester, on the minds of intelligent people, is that the whole system of sanitary reform may be comprised in the word 'humbug.' And, with all deference to constituted authorities and the Poor-Law Guardians, I am very much of the same opinion."

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STAINED GLASS.

BLACKFRIARS.—A new apse containing five windows has just been added to Christ Church, Blackfriars-road. These windows have all been filled with stained glass by Messrs. Lavers, Barraud, & Westlake. The centre window represents the "Crucifixion," the remaining four severally depicting "The Agony in the Garden," "Christ Bearing the Cross," "The Resurrection," and "The Ascension."

CITY OF LONDON SCHOOL.—The large west window at the end of the gallery of the City of London School has been filled in with handsome stained glass, the subject being "Our Lord Blessing Little Children." The size of the window is 12ft. high by 9ft. wide, and divided into three compartments, with mullions between. Each mullion is cased with looking glass. The work was executed by Mr. Charles A. Gibbs, Marylebone-road.

HOWELL.—The east window of the parish church of S. Oswald, Howell, Lincolnshire, consisting of two lights, has just been filled with stained glass by Messrs. Ward & Hughes, in memory of the late John Walter Dudding, Esq. The subjects are "The Baptism of Our Lord," and "The Institution of the Lord's Supper."

SHARROW.—A window has just been erected in S. Andrew's Church, Sharrow, to the memory of the first vestry warden of the church, Mr. William Whitehead. The window contains two subjects in the lower lights, viz., "The Offering of the Princes to the Tabernacle," recorded in Numbers, vii. The second subject represents "The Offering of the People for the Repairs of the Temple during the reign of Josiah and the Priesthood of Hilkiah," recorded 2 Kings xxii., when they were delivered unto the "carpenters, masons, and builders, to buy timber and hew stone to repair the house." The subjects are set upon an ornamental base, beneath a canopy upon a grisaille ground, enriched with lines of colour and surrounded by coloured borders. In the tracery, Moses with the Tables of the Law is the central feature, and in other parts Masonic signs are represented, indicative of the order to which the deceased belonged. The artist to whom the work was entrusted is Mr. T. W. Camm, of Smethwick.

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STATUES, MEMORIALS, ETC.

HENRY KIRKE-WHITE'S MEDALLION.—About half a century since, a young American gentleman, Mr. Francis Boot, of Boston, caused to be erected in All Saints' Church, Cambridge, a tablet, with a medallion by Chantry, in memory of Henry Kirke-White. In the course of various architectural improvements and ecclesiastical innovations, the beautiful work of the great sculptor was dethroned from its position and relegated to the back-yard of a Cambridge tradesman. There, till only a day or two since, it remained. On Wednesday week after eighteen months of protest and remonstrance on the part of all persons interested in preserving memorials of gifted writers executed by illustrious artists, it was removed from its unhonoured biding-place to the Chapel of S. John's College.—*Globe.*

MONUMENT TO THE LATE GEORGE M'CALLUM, SCULPTOR.—There has just been erected, in the Dalry Cemetery, Edinburgh, a monument to this most promising young sculptor. It consists of a simple slab of freestone, in the centre of which is a bronze medallion portrait by D. W. Stevenson.

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LAND AND BUILDING SOCIETIES.

LEEDS PERMANENT BENEFIT BUILDING SOCIETY.—The annual meeting of the members of this society has been held, and in issuing the twenty-second annual report the directors congratulate the members on the continued progress of the society. The receipts for the past year have been as follows:—Contributions, £134,024 11s. 8d.; mortgages paid off, £47,525 12s. 6d.; loans, £64,386 10s. 7d.; entrance fees, £597 8s. 8d.; total receipts, £248,786 2s. The directors recommend that 2s. 6d. per share be paid to those members entitled to the same until the next annual meeting. This surplus of 2s. 6d. is equal to 3s. 6d. as paid under the old system, there being nothing to deduct for office expenses.

MERCANTILE AND GENERAL PERMANENT BENEFIT BUILDING SOCIETY.—The fifth annual meeting of this society was held recently at the Myddelton Hall, Islington. The report and balance-sheet submitted to the meeting showed that the number of shares issued to the present time was 757. The income amounted to £10,006 8s. 6d.; the receipts from investments amounted to £2,650 7s. 11d., of which sum £2,650 had been advanced upon approved leasehold securities, and the premiums derived therefrom amounted to £200. The repayments made by borrowing members amounted to £2,042 10s. 7d. The profit for the year, after deducting all expenses of management, enabled the directors to declare a bonus of $2\frac{1}{2}$ per cent. in addition to the 5 per cent. allowed by the rules, making a total dividend of $7\frac{1}{2}$ per cent. for the year. The report further stated that in consequence of the great depression in the building trade during the past year, the directors had deemed it prudent to limit the operations of the society. The report was adopted.

Our Office Table.

PLYMOUTH SCHOOLS OF SCIENCE AND ART.—About twelve months ago the Bishop of Exeter, in distributing the science and art prizes at Plymouth, pointed out at a public meeting the need of a new building for the science and art classes. One of the local prints has also recently called attention to the need of such a structure in such an important town as Plymouth. We trust very soon to be able to announce that steps have been taken for the furtherance of so worthy an object.

THE ROYAL ALBERT HALL OF ARTS AND SCIENCES.—We have to announce that the Queen has fixed Wednesday, the 29th of March, as the day on which her Majesty proposes to open the Royal Albert Hall at Kensington.

TIN-LINED PIPES.—Great stress has been laid on the value of tin-lined pipes for the prevention of poisoning by the use of water conveyed through lead pipes, and the subject having met with considerable attention in the New World as well as in the Old, the *Boston Journal of Chemistry* calls attention to the tin-lined pipes which have come into use there, and against which it emphatically warns its readers:—First, because tin by itself is often more readily attacked and dissolved by water than is lead; and second, that when placed in association with lead, if through any flaw the water has any contact with both the tin and lead, those metals are dissolved with increased rapidity. Galvanised iron pipe is just as dangerous, for in this case salts of zinc are formed, and gradually dissolved.

DETERMINATION OF THE PHOTOMETRIC POWER OF A RICH GAS BY DILUTION WITH A POOR GAS OF KNOWN VALUE.—The conclusions arrived at by Professor Silliman as the result of a series of experiments made with great care at the Manhattan Gas Company's Works, New York, are—(1) That in all illuminating gas we have a substratum of non-luminous gas holding in solution a variable volume of luminous gas (olefines). (2) That, when a gas is too rich in illuminants to permit of accurate photometric admeasurement by the usual standards of intensity, it may be diluted, with a poor gas of known value and volume, to such a standard as is consistent with the accurate employment of the usual photometric apparatus, its true value being then calculated from known values employed.

DEATH OF A CELEBRATED BELGIAN ARTIST.—Our readers will hear with regret of the death of one of the most famous artists of the modern Dutch school—Petrus van Schendel, familiarly known as "Candle-light van Schendel," which event took place in Brussels on Thursday, the 29th ult., in the 65th year of his age. Many of his paintings have been exhibited in London and the provinces, and have always attracted great attention on account of the masterly manipulation which was one of the chief characteristics of this artist, specimens of whose works are to be found in most of the principal collections in England and Scotland.

A CRYSTAL PALACE FOR NEW YORK.—A Crystal Palace is to be built in New York at a cost of a million and a quarter sterling, covering nearly 23 acres. The palace will be situated below the centre of the island, and only one block removed from Central Park, with several railways adjoining. The sources of income—rent, entrance fees of exhibitors, and admission fees from visitors—are calculated to produce 9,124,000 dollars. The upper story of this huge building will be an art gallery, lighted from above. Its length will be 3,760ft., its width 150ft. Above this story there will be one to be given free to artists as studios, and a library will be included on this floor. At each corner of the building there will be an observatory.

FOURTEEN YEARS' SANITARY WORK IN ST. PANCRAS.—The Metropolitan Board of Works, apparently fearful for its future existence, is collecting from the local vestries and boards details of the sanitary improvements effected during the fourteen years of its reign, "by this means to rebut the allegations that have been freely made as to want of energy on the part of the local authorities of the metropolis." The vestry of St. Pancras has furnished its quota of information in the shape of a printed Report, a copy of which is to hand. During the period between January, 1856, and March, 1870, more than $6\frac{1}{4}$ miles of sewers have been constructed at its own cost, besides over 9½ miles at the cost of private individuals, 7,048 house drains have been laid, and minor sanitary improvements carried out in more than 20,000 instances. All the burial grounds in the district have been closed, and an extra-mural cemetery at Finchley provided, at a cost of £37,000. Public baths and washhouses have been erected, and used in one year alone by over 160,000 persons. Paving, road-making, watering, &c., contribute to swell the total expenditure in fourteen years to £884,774.

KITCHEN BOILER EXPLOSIONS.—A correspondent writes:—"Next winter let us hear no more of deaths resulting from the bursting of kitchen boilers, when the remedy is so near at hand and costs so little. One of the smallest safety fusible plugs, sold by the National Boiler Protection Company, Manchester, applied to any hermetically sealed kitchen boiler will protect it. The fusible plug should be screwed into the top of the boiler, and protected with a pipe, so that when called into operation the steam and hot water may be propelled up the flue. This fusible plug is partly made of a metal which melts at a heat a little in excess of boiling water; when, therefore, the boiler is sealed up by frost, the water soon becomes hotter than 212°, the soft metal of the plug melts, the plug falls to pieces, an opening is made in the boiler for the steam, and an explosion is prevented. Every hot-water heating apparatus should be fitted with one of these safety plugs, and is not safe without it."

THE NEW COURTS OF JUSTICE.—The tenders for the foundation of the New Courts of Justice were to have been delivered yesterday. About twenty-five of the leading contractors of London were applied to, but the conditions put before them were found so inequitable that the competitors unanimously agreed not to tender till these conditions should be modified in an equitable spirit. In some disputed cases that have lately come before the Judges, they have expressed their strong sense of surprise that builders could be found willing to sign such one-sided contracts as many of them have been accustomed to do, and their disapprobation of those who put out such contracts. The Institute of Architects have fully considered the question, and have agreed with the London builders as to what is fair and equitable, but up to the present moment the Office of Works is insisting on conditions which the judges in a late case (Jones *v.* S. John's College, see the *Times*, Nov. 11) condemned as one-sided and improper. The competitors have solicited a conference with Mr. Ayrton on these points, feeling every confidence that he will be willing to listen to reason in the matter. They have considered that there would be no use in sending in their tenders till this matter be arranged, as in point of fact by so doing they would be binding themselves to the conditions. So the matter rests for the present.

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Chips.

The pupils attending the Bristol School of Art, Queen's-road, Bristol, have presented a handsome edition of Dr. Smith's "Classical Dictionary" to Mr. James Fewings, one of the assistant-masters, on the occasion of his leaving to continue his course of studies.

It has been resolved by the Glasgow Police Board to pave the Paisley-road, west of West-street, with granite, at a cost of £8,000.

We understand that Messrs. Lee, of Westminster, have taken the contract for the new works connected with the Harwich Harbour Defences.

The erection of a floating bridge for the Hooghly is stated to have been sanctioned by the Government of India. Mr. Leslie, the engineer concerned, will proceed to England shortly, and it is expected that the bridge will be actively commenced towards the close of next year.

Thomas James Smitheman, builder, of Brompton-road, was on Wednesday committed for trial on a charge of uttering a forged bill.

To make a new rope as limber and soft as an old one, boil it two hours in water, and then thoroughly dry it in a warm room.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Royal Institute of British Architects.*—"Considerations on the Selection of Building Sites." By Professor Ansted. 8 p.m.

FRIDAY.—*Architectural Association.*—"On Colour Decoration." By Mr. J. D. Crace, A.R.I.B.A. 7.30 p.m.

Timber Trade Review.

PRICES, 4th January, 1871, per Petg. std.:—

Quebec 1st quality floated pine, 16*l* to 17*l* 5*s*; 2nd do., 12*l* to 12*l* 10*s*; 3rd do., 8*l* to 9*l* 5*s*.

Quebec 1st quality bright pine, 18*l* to 19*l* 10*s*; 2nd do., 12*l* 15*s* to 13*l* 10*s*; 3rd do., 8*l* 10*s* to 9*l*. All broad widths from 10*s* to 20*s* extra.

St. John's 1st quality white spruce, 8*l* 5*s* to 9*l*; 2nd quality, 8*l* to 8*l* 5*s*; 3rd quality, 7*l* 10*s*; Gefle yellow deals, best quality, 10*l* 5*s* to 12*l* 10*s*; Holmsund battens, 8*l* 10*s* to 10*l* 10*s*; 3rd quality Gothenburg yellow, 8*l* 10*s*; 4th quality do., 9*l* 10*s*; Petersburg and Riga white deals, 8*l* 10*s* to 9*l* 10*s*; Wyburg yellow, 10*l* to 10*l* 5*s*; Petersburg yellow, 13*l* to 13*l* 5*s*.

Quebec spruce 1st quality, 8*l* 15*s* to 11*l*; 2nd quality do., 12*l* to 12*l* 10*s*; 3rd quality do., 8*l* to 9*l*; battens, 7*l* to 8*l*; pitch pine planks, 12*l* to 12*l* 15*s*.

Lathwood, per cubic fathom.—Petersburg fresh, 5*l* to 5*l* 10*s*; Swedish, 3*l* to 4*l* 15*s*.

Timber, per load of 50 cubic feet.—Swedish, 52*s* to 55*s*; Baltic best middling, 72*s* to 80*s*; do. good middling, 43*s* to 67*s*; do. common middling, 52*s* to 58*s*.

Lower Port spruce, per Petg. std., 7*l* to 8*l*.

The recent severe frost having to a great extent stopped building operations, the timber trade, as usual at this season of the year, is not very brisk, but the trade doing is healthy, and free from the speculation which has marked former years. The rumours of a war with Russia slightly affected the market at one time, and Russian goods are still high, but when the spring importations arrive there can be no doubt of a fall in prices. If otherwise we have plenty of good substitutes in Swedish goods.

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LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:—

Pig Foreign	per ton	£17	12	6	£17	15	0
,, English W.B.	do	19	15	0	0	0	0
,, Lead Co.	do	18	15	0	19	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled	do	19	0	0	20	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER:—

British—Cake and Ingot	per ton	£70	0	0	0	0	0
Best Selected	do	71	0	0	73	0	0
Sheet	do	74	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	70	0	0	73	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	0	0	65	0	0
,, Refined ingot	do	69	0	0	71	0	0
Yellow Metal	per lb	0	0	6½	0	0	6¾

IRON:—

Pig in Scotland, cash	per ton	£2	11	6	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
,, Wales	do	6	10	0	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	10	0	9	15	0

TIMBER.

Teak ....load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	0
Dantzic oak	5	5	6	15
,, fir	2	12	4	0
Memel fir	2	15	4	0
Riga	3	3	3	10
Swedish	2	7	2	14
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	4	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	0	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do.	12	15	13	10
Archangel, yellow	11	10	12	10
St. Petersburg, yel.	12	0	13	10

Finland	£7	0	£8	
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per	s.	d.	s.	d.
sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale....per ton	£ 6	0	0	0
Sperm body	77	0	78	0
Cod	35	10	0	0
Whale, Sth. Sea, pale	36	0	0	0
Olive, Gallipoli	50	0	0	0
Cocoanut, Cochin, ton	45	0	45	10
Palm, fine	0	0	0	0
Linseed	30	0	31	5
Rapeseed, Eng. pale	495		49	10
Cottonseed	27	0	33	0

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BUENOS AYRES GOVERNMENT CERTIFICATE.—Translation:—We, the undersigned, at the request of Messrs. Jas. C. Thompson and Co., certify that the Iron Safes of Messrs. Chubb and Son, London, of which these gentlemen are agents, were exposed for several hours to the fire that took place in the offices of the National Government on the evening of the 26th instant; that in our presence they were easily opened with their respective keys; that the moneys and important documents they contained were found in perfect order, and that these safes are now in use in the National Treasury Office.—Buenos Ayres, July 31, 1857.

Signed

J. M. DRAGO, Treasurer of the National Government.
JOSE TOMAS ROJO.
JUAN M. ALVAREZ.

A true copy.—A. M. BELL.

A large assortment of these SAFES may be inspected, and lists of prices obtained at CHUBB and SON'S, 57, St. Paul's-church-yard, London; 68, Cross-street, Manchester 28, Lord-street, Liverpool; and Horsley-fields, Wolverhampton.

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Trade News.

WAGES MOVEMENT.

THE JOINERS OF LEEDS AND THEIR EMPLOYERS.—A meeting of the master builders of Leeds was held at the "Nag's Head" Inn, Upperhead-row, last week, to consider a notice received from the operative joiners, requesting an alteration of their working rules, and to rescind rules relating to arbitration. The notice to expire on the 1st of July next. The present working hours of the joiners are ten per day for the first five days, and six hours on the Saturday, the rate of wages being 6½d. per hour. The demand made in their notice is that nine hours per day for the first five days, and five hours on Saturdays be the working hours, and the rate of wages 7d. per hour; further, that a rule be made to prohibit piece-work in carpentry and joinery. The notice was fully considered at the meeting of masters, and it was resolved that the present time is inopportune for considering any such alteration of the joiners' rules.

TENDERS.

DORKING.—For villa residence, Holmwood, for Dr. E. Bird. Mr. E. B. J. Knox, architect. Quantities supplied by Messrs. Corderoy:—

		Allow or old materials
Lynn & Dudley	£2850	£91
Putney	2595	34
Shearburn	2594	30
Gammon	2397	25
Bags & Ramage	2355	57
Shermer	2244	28

LEAKE.—For restoration of chancel, Leake Church, Lincolnshire. Mr. Edward Browning, architect, Stamford:—

		Deduct value of old materials.	Nett amount of tender.
Richardson & Roberts	£1660 0 0	£ 60 0 0	£1600 0
S. & W. Pattinson	1443 10 0	100 0 0	1343 10
Perkins & Son	1480 0 0	140 0 0	1340 0
Law & Son	1393 18 7	120 18 7	1273 0
Halliday & Cave	1420 0 0	170 0 0	1250 0

MANCHESTER.—For S. Anne's Infants' school, Ancoats. Mr. Herbert E. Tijon, architect:—

Turley	£409
Gerrard	395
Ward	390
Herd & Eadie	368
Thompson (accepted)	360

N. B.—Plastering and painting not in this contract.

PEMBROKE DOCK.—For passenger station.—Stone, lime, and sand provided. Messrs. Szlumper & Aldwinckle, architects:—

Jones & Johns	£660 0
Davies	580 0
Rogers	500 0
Thomas	493 0
Allen (accepted)	484 10

TENBY.—For passenger station at Tenby, on the Pembroke and Tenby Railway. Stone, lime, and sand provided. Messrs. Szlumper & Aldwinckle, architects:—

Jones & Johns	£815
Davies	700
Thomas	695
Allen	659
Rogers (accepted)	560

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BATH STONE OF BEST QUALITY.

RANDELL, SAUNDERS, and COMPANY, LIMITED. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
[ADVT.] Corsham, Wilts.

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

WHARFDALE UNION, Feb. 9.—For plans, specifications, and estimates for the erection of a new workhouse, to accommodate 150 inmates, exclusive of vagrants, on ground situate at Newhall, near Otley. C. J. Newstead, clerk to the guardians, Board-room, Boroughgate, Otley.

WEST HAM DISTRICT, Jan. 9.—For the construction of about 940 feet run of 2ft. 3in. by 1ft. 6in. brick sewer, and about 330 feet run of 15in. pipe sewer, together with manholes and other works connected therewith, in the Romford-road, Stratford, E. Charles Wilson, clerk, Town-hall, Stratford, E.

MUNICIPALITY OF COLOMBO, Jan. 31.—For the preparation and supply of the smith and founder's work required for the new public markets and municipal offices at Colombo, Ceylon. S. Grenier, secretary, M.C., Colombo.

BURNTISLAND, Jan. 14.—For the construction of a wet dock and other works within the harbour of Burntisland. — Wallace, town clerk, town clerk's office, Burntisland.

WAR DEPARTMENT CONTRACT, Feb 4.—For the necessary work and materials required in the performance of work and repairs, and supply of labour or materials separately, as required for the service of the War Department, to the buildings in the Permanent Barracks, camps, or property at Aldershott, and connected with the War Department property at or in the vicinity of Aldershott. Director of Contracts, War Office, Pall Mall.

WORCESTER GENERAL INFIRMARY, Jan. 14.—For the erection of an out-patients' department, and for making sundry alterations and additions to the Worcester General Infirmary. Messrs. Martin & Chamberlain, architects, Christ Church-buildings, Birmingham.

HEREFORDSHIRE, Jan. 31.—For the erection of farmhouse at Hegdon Hill, near Bromyard, Herefordshire. Ernest A. Day, architect and surveyor, Foregate-street, Worcester.

WAR OFFICE CONTRACT FOR TIMBER, Feb. 4.—For the supply of dry ash plank, of the very best and toughest quality, thoroughly seasoned. Forms of tender may be obtained from the Director of Contracts, War Office, Pall Mall, London.

THE BUILDING NEWS.

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LONDON, FRIDAY, JANUARY 13, 1871.

CHIMNEYS.

MODERN chimneys, to a large extent, have two faults. Their architecture is a failure, and their mechanism is not a success. The problem, here as everywhere else, is to join the useful to the graceful, or, at the least, to the inoffensive. And here, as everywhere else, half the people who try to solve the problem leave out one of its conditions. Some of them seem to think that if a chimney is but ugly enough, there can be no danger of its smoking. The chimney doctor inherits the superstition which possessed doctors in general some centuries ago, and believes that whatever is disgusting must infallibly be curative. His cowls and tallboys are remedies precisely analogous to the toad's fat and skull scrapings which were once supposed to be all-powerful, and the supposition in each case is equally rational. Other people, again, leave the use of a chimney out of their calculations, and try either to hide it entirely or at least to disguise it. But in the result there is not much to choose between the two classes—between that which rejects architecture and that which rejects utility. In abandoning one, each misses both; and the only difference is that the first class seeks for ugliness, and that the second inevitably falls into it.

We think that there is a very frequent connection between the two faults just named. Oftener than not they both spring from the same cause. If the British householder's body is poisoned with smoke indoors, and his mind with ever-present ugliness out of doors, both these inflictions are laid upon him by one uniform principle. They are results of that "Classic man's recipe for designing," of which we spoke the other day. They are among the penalties we must pay for evenness, and regularity, and sham simplicity. This is what we come to by following that plausible delusion—the modern Italian style. It is so grand and simple, there is no nonsense about it, and nothing done for show. So people fancy who are sublimely ignorant of the whole matter, whether they happen to be Prime Ministers about to build new Foreign Offices, or merely retired cheesemongers going to put up a stucco villa at Norwood. The truth is that everything in the style is done for show. It starts with a showy exterior, made to rule, without reference to the inside arrangements. It goes on adding to this pilasters, and cornices, and porticoes, for show and nothing else; and it finishes by dwarfing or hiding the chimneys because they are not showy enough to match the rest. Its simplicity is a false pretence, kept up by falsehoods in every part. With a system of designing that begins on the outside it cannot be otherwise. The first thing it does is to make a rigid and uniform exterior; to settle the position of every door, and window, and piers. The next thing is to squeeze the necessary apartments into this Procrustean shape; to contrive, as far as may be, that the rooms may fit the windows and doors. It is like making a man's coat by the proportions of the Apollo Belvedere, and then pinching the man here and padding him there until he is somehow squeezed into it. This is how the beautiful symmetry of modern Classic is attained; it has one model for every one, and with more or less difficulty compels every one into it. "And is not it the best model?" it says; "Where will you get a finer shape?" As to the shape, we answer, it may be fine enough in its place. But its place certainly is not on our back. What with the tightness of the coat at one point and the looseness of it at another, it is hardly wearable; and if we cannot get a better one than this it would be a great relief to do without coats altogether, and go about in our shirt-sleeves. In other words, if we cannot have an architecture that will accommodate itself to our wants, and bend this way and that as we happen to require, we should be a good deal better off with no architecture at all. If, for instance, there is no style to be found that will deal with our chimneys and condescend to study them, we had better turn all styles out of doors together, and see what can be done for chimney construction when they are gone.

But fortunately matters are not so bad as this. It is not real, but only pretended architecture which refuses to look at facts and conform to them. It is not ancient Greek or even Roman art which follows so absurd a plan; still less is it Gothic. It is nothing but the bundle of rules and mechanical prescriptions which calls itself Italian or Modern Classic, which the old Classic men, if they could only see, would be the first to laugh at. Nowhere else, in any assignable variety of style, is one ready-made exterior imposed on all sorts and descriptions of building. Wherever architecture has had a spark of life it has always had a power of adaptation. Its aim has been to fit every structure with that precise design which would suit it best. It never had so vain a wish as to make all its works grand alike. It kept its grandeur for grand occasions, its symmetry for places where symmetry was natural; but it was not so much infatuated about either grandeur or symmetry as to keep up their appearance where it could not have them in reality. It had no love for a sham magnificence—a padded misfit. It treated every subject separately, and made the best of it, displayed its character, brought out its distinctive points, and put its very essence into palpable and visible shape. And what it did with buildings as a whole it did equally with each of their parts. In details, as in masses, there was no deception. The only question asked was, "What feature does the construction lead to?" That point once settled, the only course was to turn them to the best account. Some of them, in their unconquered state, were doubtless ugly, some discordant, some mean and commonplace. The modern Classic man would have hidden them away altogether, or disguised them out of knowledge with his dummy cornices and other stock-in-trade. The ancient architect, whoever he was, did just the opposite. He seized on their natural expression and developed it, brought it into harmony with the rest of his work, refined the forms, beautified the construction, and increased the utility of the detail, all at the same time. This is what the Middle Age builders did to the buttress; and, though examples are scarcer, this is also what they did to the chimney. And even when the Mediæval style had vanished, its spirit did not die. In quiet nooks, in country villages, and out-of-the-way towns, where fashion failed to penetrate, people went on for centuries—nay, have even gone on to this day—doing their work on those principles of nature and common sense which we call Gothic. And here, in their manor houses, and farms, and cottages, which no one ever sketches or illustrates, there are chimneys to be found with a refinement and propriety for which we might search London in vain. The chimneys, in fact, are often the great feature of this unpretending domestic architecture. Their tall clusters rise high above the steep pitched roofs,—for utility doubtless—since cottage and farmhouse builders seldom spend money on show, but yet with a wonderful picturesqueness, such as our modern designers can hardly evolve with labor out of all their needles towers and turrets. Of course there are many living architects who give us chimneys worth looking at. Seldom, perhaps, do we see more effective ones than some by Mr. Norman Shaw in a design at the last Academy Exhibition. Mr. Pritchard, too, gives much care and attention to his chimneys, and the same thing might be said of many others. But their work, unfortunately, does not come much into our towns. Nearly all that we see in them are chimneys kept too low, that they may agree with a horizontal style; chimneys which it was attempted to keep out of sight, but which have shot up a cluster of zinc and iron abominations, and chimneys which start from an outside wall with no projection or visible chimney-breast beneath them. They are all ugly, and all liable to smoke. They are built for the sake of modern Classic rules, in defiance of plain facts which every builder knows. If a chimney is not carried up high enough it will smoke; it will smoke worse if there is a high roof or wall adjoining it; it will do so with equal certainty if its flue is taken up near an outer face of the house without sufficient thickness of brickwork to keep the cold out. But by Italian regulations we cannot have a projection for such an unheard of purpose as to keep a flue warm; and we cannot have a tall stack carried up to produce a good draught, because it would jar with the general horizontal effect of the elevation. In point of fact, neither Vitruvius nor Sir William Chambers have left many instructions on the subject. There is not a model chimney put forth by any great authority; and as it would be heresy to invent one, besides being a good deal of trouble, the only thing that remains is to keep our chimneys as much as possible out of sight. It is unfortunate that this should make them smoke, and unfortunate that they should be disfigured by cowls and windguards in consequence of smoking, but you would not have us take any steps to mend them without authority? This, judging from results, seems to be the Classic man's policy as to chimneys. Two hundred years of such a policy, in this and other details, have left our town architecture what we see it. Surely it is none too soon that we are trying a different one, the policy of developing instead of disguising, the system which works from within outwards, which starts with construction and bases everything upon it. It is none too soon that we are breaking through these absurdest of rules, and learning that we may actually venture to do what is necessary and rational without first waiting to find whether some great man has done the same thing before us. It may be long before we are free from their influence. Their spirit, unfortunately, has penetrated where their letter is disregarded, and Gothic as well as Classic has been stunted in its growth by precedent and tradition. It takes time to fit a nation of slaves for liberty; it will take time, after the bondage of two centuries or more, to convince us as architects that we may really think for ourselves, and more time yet to make us think wisely. But if architecture is to live it will be done, and we hope there are signs that it is doing now.

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ROYAL ALBERT HALL.

ON Saturday an interesting trial as a further test of the acoustic qualities of the Royal Albert Hall was held. The band of the 1st Life Guards, under the direction of Mr. Waterson, attended at half-past two o'clock, and from that hour until past four various instrumental pieces were played. The selection was well made, affording an opportunity of hearing the effects of loud orchestral chords as well as the subdued tones of pianissimo passages, and two songs were also given by a lady vocalist, with accompaniments on a Kirkman pianoforte. The result was satisfactory; there seemed sufficient resonance to insure uninterrupted vitality to the waves of sound, and there was but very little re-percussion, and that confined almost to one point on either side of the vast oval of the interior of the building. The vocal tones were heard remarkably clearly, and the singer appeared to be able to deliver her voice with unexpected ease. One lesson may certainly, however, be learnt by this trial, and that is that a most perfect verbal enunciation will be necessary to all who essay to sing in the new building; in this instance it was impossible to catch a single word, so that although the sounds were most pleasantly audible, the fair vocalist might have been singing in any known or unknown tongue, so far as ability to distinguish was concerned. The trial was however scarcely conclusive; the scaffolding still remains in the centre, the glass inner dome is not yet complete, and the orchestra was by no means as full as would be likely to be employed at any concerts. Single sounds there can be no doubt of, but a large chorus of mixed voices, with corresponding magnitude of instrumental accompaniment, will probably produce results not as yet ascertained. One point, however, is quite clear, and that is that the trial of Saturday is thoroughly satisfactory as to the ability of the building to convey the sound, and that any difficulty that may on completion arise, can readily be met by drapery to the upper alcoves, and, if necessary, by opening spaces below and in the surface of the inner glass dome to lessen the effects of the inevitably very considerable disturbance of the atmospheric waves in the upper part of the building. A large number of visitors attended, who seemed to express a general opinion in favour of the satisfactory results of the trial.

ANOTHER PHASE OF THE YORKSHIRE RIVERS.

THE other week we called attention to the present state of the Yorkshire rivers, as represented by the Aire and the Calder. A Bill has been deposited in Parliament, to be brought forward next session, which proposes to deal with these two rivers effectually. It proposes to appoint a Conservancy Board for the basins of these two rivers, consisting of persons to be named in the Bill, of persons representing the owners, lessees, and occupiers of property within the basins drained by the rivers Aire and Calder, and of Corporations, Local Boards of Health, and other authorities within the same area, for the purpose of protecting those rivers and their tributaries from pollution and obstruction.

The two basins are proposed to be called the "Conservancy Area," which will commence, as to the Aire, at Malham Tarn, and as to the river Calder at the head of the Calder, north-west of Todmorden, and will include, amongst other places, Skipton, Keighley, Todmorden, Halifax, Bradford, Huddersfield, Dewsbury, Batley, Leeds, Wakefield, Pontefract (or, locally, "Pomfret"), Castleford, Knottingley, Snaith, and Goole. The Bill proposes to confer the following powers on the Corporations or other local authorities within the Conservancy area, and in their default to carry out the provisions of the Act then on the Board already named:—

The interception, or otherwise dealing with all sewage that now flows into these rivers or their tributaries, whether proceeding from towns, villages, or manufactories, and the defecation and purification and return of it into these rivers or streams; or it may be conveyed either into the river Ouse or the river Humber below Goole; or it may be applied to the fertilisation of any land which may be acquired for that purpose.

The promoters seem to contemplate carrying main sewers through or near to agricultural land before reaching an outfall; for they propose to take power to sell any part of the sewage to persons who may wish to avail themselves of it on the line of the sewer, or of any part of the residuum of it, in case a system of precipitation and defecation be adopted; and for that purpose they propose to take power to purchase any patent rights or licenses connected with processes that may be found to be effectual. This will give a stimulus to invention that has been wanting, while people who were inclined to give attention to this subject had no certainty of any process being adopted, however effectual it might be.

The Conservancy Board may compel all persons who abstract water from any stream for the purpose of manufacture, navigation, or any other purpose, to purify it before returning it into the stream or any river.

It is contemplated to impound the surplus waters within the Conservancy area by the construction of sufficient reservoir room, and to supply from these reservoirs any deficiency in the flow of water in the rivers and streams.

Existing drainage works may be taken for the purposes of the Board, so far as they are available, and all new works hereafter constructed by any Corporation or local authority, within their own limits, are to be executed according to plans prescribed or approved by the Conservancy Board.

The Conservancy area is to be divided into separate districts for the purpose of rating, the extent to which any district will be rated being proportionate to the benefit to be received, or according to the extent of the works required in consequence of the position or acts of the parties to be rated.

Power is to be given to the Board, and Corporations, and other local authorities to take lands, houses, and other property, compulsorily or by agreement; but in case of lands being taken by compulsion, a provisional order from the Home Secretary will be necessary, and the confirmation of that order by Parliament; and the Board, and Corporations, and other local authorities, and their officers, contractors, and servants, are to be enabled to enter temporarily upon lands in the Conservancy area for the purpose of carrying out the provisions of the Bill.

Our readers will agree with us that nothing can exceed the importance of the objects of this Bill. It will prevent the obstruction of the rivers and their tributaries by solid matter, which now raises the bed and contracts the banks of almost every stream, and thereby in many places causes serious floods above the obstructions, throwing water-wheels into backwater, injuring crops, and creating a damp and unwholesome atmosphere. It will prevent the fouling of the water, which is now done to such an extent as to kill all fish, and make the water stink in the nostrils. It will recover from the sewage now flowing uselessly down to the sea all those fertilising properties it is known to possess, either by a process of irrigation or by receiving the sewage into tanks, and there dealing with it in such a manner that the water may be clarified and purified before it re-enters the stream, while the fertilising elements will be retained along with the ponderable matter, and applied as ordinary manure to land, the one or the other process being adopted according to the locality and the lie of the land in relation to the main sewer. One of the best provisions of the Bill is that it will enable the surplus waters—of which there are large quantities in every valley—to be stored up and economised for use in dry seaons, and for the equal benefit of all. Waterworks reservoirs—that is, reservoirs constructed to store water for the use of the mills affected by the abstraction of water for the supply of towns, as a compensation for that abstraction—have already improved the value of mill property dependent on water-power, by giving a more regular flow of water in the streams, but these being partial in their application the benefit to the whole area or district is not fully developed.

The Bill may be opposed, and strongly, but its merits are surely sufficient to prevent its being thrown out. The opposition cannot be against the merits of its beneficial provisions, but will probably be on its rating clauses. Those who have a convenient "tip" at present for all their rubbish in the stream on which their works are situated will not like to lose it; and those who now pour their fouled water into the same stream from which they derive it, but below them, will not like to pay for a more cleanly and wholesome system; while those who are remotely situated from the river will think they ought not to be called upon to pay for the more direct benefit of others. And some of the corporations and local boards will think it an interference with local self-government, and the owners of land upon which the sewage is to be applied will object to sell compulsorily what is wanted. But we hope these will all vanish before the sterling merits of the proposed measure.

KELLY COLLEGE.

WE are informed it is finally decided that this college, the erection and endowment of which are provided for in the will of the late Admiral Kelly, shall be established at Tavistock. It was the wish of the testator that the building should be somewhere in his native county of Devon, but no particular place was stipulated by him. A great many landowners then, doubtless perceiving the advantage to their property of the proximity of such an institution, made very liberal offers of estates. The most liberal seems to have been that of the Duke of Bedford, who offered the trustees the choice of several sites at Tavistock, and, we believe, a large sum towards the endowment. The trustees, very wisely, await professional advice before determining which particular site in that town they will select.

THE APPROACHING INTERNATIONAL EXHIBITION.

THE time for the first of the Annual International Exhibitions approaches, but the demoniacal carnage on the Continent still rages. The French Provisional Government has, however, confirmed the proceedings of the late Imperial Government in regard to the Exhibition, which consisted in taking a piece of land from the Kensington Museum authorities, and erecting a building around three sides of a quadrangle at its sole expense. The one point in which the French have made a great error (says the *Art Journal*) is in the roofing and lighting of their halls. These rooms are of the same width as the English galleries—viz., 30ft.; they are 27ft. high. The ceilings are flat, with a louvre light in the centre, and the result is that there is a blank, box-like space between the louvre light and the ceiling; while both that surface itself and the whole of the upper part of the gallery is thrown into dense shadow. The object is said to have been to secure ample wall space for the display of tapestries or painting. At any rate, it is a serious blunder, which contrasts very strongly with the good lighting of the English galleries.

The northern aisle of the Royal Horticultural Conservatory is to be widened and altered in form, so as to serve as a rain-proof court immediately adjoining the Albert Hall. The large upper corridor of this building is also being prepared for the display of pictures on the occasions of the exhibitions. There will thus be a continuous covered walk along the 1,200ft. of gallery, through the circular passage and conservatory, round the corridor of the amphitheatre, and so down to the gallery on the west of the gardens, which is of equal length with that opposite. When it is remembered that these galleries cover two floors, and that the French court has to be taken in addition, it will evidently be a good day's work only to look through the exhibition. A feature which will be novel, and, we trust, instructive, will be the display of architectural drawings. Continental architecture will be fairly represented; and we trust that the architects of this country will not allow the verdict to go against them for want of putting in an appearance.

THE INDIAN PUBLIC WORKS DEPARTMENT.—The case of "negligence, incapacity, and corruption," referred to on page 3 of our last number in connection with the administration of the Indian Public Works Department, forms the subject of comment by the *Spectator*. Our contemporary says:—"Lord Mayo is energetic, but neither he nor any other man can root out the vices of this department until he has a service of men who can do the actual work, and yet be trusted not to steal. At present the actual builder usually steals, while the officer who is supposed to look after him, and who does not steal, is so loaded with desk work that he is compelled to trust the untrustworthy subordinate."

ARCHITECTURAL DRAWINGS BY MR. W. BURGES.

IN the notice of this work by Mr. Burges in our last week's issue, we gave a general description of it, and the author's account of of its history; and we conceive that such must be more satisfactory to our readers, and particularly that large portion of them to whom the book itself will not be immediately and readily accessible, than if we had endeavoured to display our own learning and intelligence by an hypercritical search for its shortcomings. We do not wish to be reckoned among those critics who look upon an author as having taken up an idea of their own, and therefore open to the harshest judgment for not having carried out to an ideal perfection the project of another, but when we find a good thing well done we desire to be therewith content. Nevertheless, it is of course important to maintain a high standard as the aim which all authors should be expected to set before themselves, not only as an example to others, but also because by occupying the ground they prevent another labourer from undertaking the same work hereafter.

We have a right to look in the case of every publication, first that it should present a good and obvious raison d'être, and secondly, that in point of execution it should be thorough and masterly. We might excuse in the plates of the Architectural Association "Sketch-Book"—avowedly the tentative efforts of students—a lack of such qualities, but not so in a work which is a deliberative undertaking of a matured professional man. We have often called attention to, and deplored the manner in which English authors of architectural publications are apt to flit about like butterflies, with too wide and objectless a range, rather than, like steady-going bees, bent upon laying up good store for future use, and we have been positively provoked with the transient nature of the glimpses thus given us of things which we would fain have studied. Certain well-known architectural gems have thus afforded a subject for a sketch in half a dozen different works, but we may turn from one to another, and perhaps through the whole, without getting more than glimpses from each from varied points of view of what we are seeking to know, the anatomy and construction.

At first sight the reading of the titles of the plates in this work of Mr. Burges's would lead us to think that we were to be treated to the same superficial style of fare. The same well-known names, from as many, if not more widely-spread, localities, are to be found in the indexes of the previous works by Nesfield, Shaw, Rogers, and others. Is this, then, but another first-fruit of an architect's career, the gleanings of the grand tour made with the view of learning what others have done before him in the profession which he has chosen? Were it only this, we should not be inclined to admit that it had sufficient raison d'être.

That it is such, Mr. Burges freely admits; and to that fact may fairly point in extenuation of faults of style, which must perforce be attached to work of the class, for it would have been detrimental to the accuracy of his drawings to have striven to amend them in such particulars. It was because the manner in which the drawings were taken, with a view to the elucidation of the construction, and with regard to extreme accuracy in points of detail, was different to anything before done that they have been published. In the opinion of the author and his friends, in which we venture to say the architectural public will coincide, this was its raison d'être. It is no longer the picturesque outside of buildings that is presented to us, but a dissection of their interior construction. The drawings are copies of those which were plotted on the spot, and necessarily therefore devoid of graceful execution, although reliable in point of accuracy. Had the work been one projected and executed by the author at the present stage of his career, we might have complained of being dragged backwards and forwards between France and Italy and England and Wales after objects seemingly having but slight connection with each other; and we can pass over many a fault of drawing in what is in truth a note taken in a hurry to record some information, and the more readily because these notes have been transcribed for us by another hand, and must necessarily have lost something in the process. Next to the choir of Beauvais Cathedral, the flèche of that of Amiens occupies the greater number of pages; and the six plates (35 to 40 inclusive) in which its whole complicated construction is illustrated and explained is perhaps the ablest and most characteristic set of drawings in the book. Almost the entire structure, the measurement and plotting of which would appear an Herculean labour, is drawn to $\frac{1}{4}$in. scale, with every tenon and pin, and the ornamental details again to a larger scale. While we wonder at the patience and skill displayed in the draughtsmanship, we feel lost in admiration at the constructive and artistic skill of Lewis Cordon and Simon Tameau, the carpenters, who were commissioned to make it, and who finished it in 1529, and whose work, with the exception of a few repairs to the woodwork, &c., Mr. Burges asserts to be now very much as they left it, although the method upon which they proceeded was an innovation upon the previous one of erecting wooden flèches, inasmuch as they did not trust to main beams of great strength, but made a sort of floor by means of trusses, upon which they built up their spire in the manner so well shown and described in these plates.

Chalons-sur-Marne supplies material for four plates, Nos. 9 and 26 from the Church of Notre Dame, and 52 and 53 from the Cathedral. In the first of these, while we find no erroneous lines of stone-jointing inserted, we think some important ones have been omitted, leading to the impression that some very queer-shaped blocks have been used in the construction, particularly at the junction of the two arches.

Troyes Cathedral—which Mr. Burges says, "unfortunately, like Beauvais, was not constructed in the best manner, and this, together with bad foundations, have rendered a rebuilding of a great portion of the work necessary,"—furnishes three plates (10, 11, and 27). These were taken under exceptionally favourable circumstances, the lamented rebuilding having proved "an ill-wind that blows no good," many parts having been reached which are in most cases inaccessible. We have, therefore, a section through the upper part of the choir, with all the details of its construction, and note in it that the usual third order of moulding in the tracery of the clerestory windows is dispensed with, and at the same time that the mullions are subordinated in width and decorated alternately with one and two columns in the same plane—an economical but hardly satisfactory contrivance.

Mantes Cathedral supplies in plate 14 an interesting stone roof over the vaulting of a chapel, and (15) specimens of richly-coloured roof tiling.

From England we have the rose window from the Temple Church, plate 13, and a dissection of the elaborate screen in Bishop Alcock's Chapel at Ely (plate 18), a more curious than valuable example of late date.

Wales contributes some details of battlements and curtain walls from the castles of Conway and Carnarvon, plates 23, 24, and 25, which, as Mr. Burges has gone out of his usual way to add some conjectural restorations, are interesting, particularly as it is somewhat strange that few reliable illustrations of these buildings have ever been made. From the Castle of Chillon on the Lake of Geneva, "probably one of the best preserved military edifices in Europe," we have, in plate 22 and the accompanying description, some interesting details, which doubtless have assisted the author in his recently-constructed galleries at Cardiff Castle.

France has furnished other architectural details from St. Omer, Villeneuve l'Archevêque, Amiens, Rouen, Beauvais, Dijon, Beaune, Noyon. The wisdom of the selection of some of these examples we are obliged to question, and would point to plate 32 to ask the reason that it is entirely occupied by a full-sized, certainly indifferent, drawing of a late capital from Amiens of no beauty, and unexplained by plan or section of the horns which bear the foliage, which alone would have rendered it of any value.

From Italy we have plate 12, from S. Andrea, Vercelli, two curious doorways; and plate 16, an altar from S. Maria Novella, both insufficiently filled; plate 20, a balcony from Padua; and 21, machicolations of Palazzo Vecchio, Florence, to which this same remark would apply, as well as partially to plates 31 and 32, which represent brackets from S. Antonio, Padua, and details from Vercelli; in the former of which, though the mouldings are given half full size, the foliage is hardly explained at all.

Some smaller objects of interest are given in various plates, such as a cross from the Museum at Chartres, and another from Mollinot, near Rouen, in plate 17; several fountains in plate 19; sketches of furniture from various sources, plate 59; the construction of the interesting Armoire in Noyon Cathedral, plate 61; the cope chest in that of Salisbury, plate 63; a Girouette, plate 67, one of the most valuable in the series; two chalices with all their details, plate 68; and the Crown of Constanza, plate 69.

The six last plates in the work are filled with notes of costume from manuscripts and samples of alphabets, which will be found useful for reference, but which will, we think, need revision if they are to be republished in another and more important form, as is promised.

Altogether, the collection is a large, varied, and useful one, though not such in arrangement or execution as we might expect from its able author had the drawings been undertaken with a view to publication in the first instance, or at a later period of his career. But then we must remember that it is not probable that any professional man could spare the time requisite for such a purpose after entering into practice, so that on the whole we feel we ought to be thoroughly thankful for what he has been good enough to give us.

ALTERATIONS IN CHEAPSIDE.—It is stated that with a view of correcting the narrowness of the Poultry the houses on one side are to be set farther back without pulling them down. If this answers it is to be hoped (says a contemporary) that the houses of many other streets will be "set farther back." The houses on both sides of Bond-street, Piccadilly, might with advantage be pushed back a few yards if there is any room for the pushing process. In S. Martin's-lane the houses might be pushed out of sight altogether. We want, in fact, some architectural police constable who will by a gentle tap of his official staff make all the houses in our narrow streets "stand back." They are a disreputable lot, and it would be far better to pull them down altogether, but if they insist on standing they should at all events not be allowed to obstruct the traffic. There is, however, one house in the Poultry which deserves a certain amount of respect owing to an incident in connection with it, related in Nichol's "Literary Anecdotes." The King's Head Tavern, No. 25, was kept in Charles II.'s time by William King. His wife happening to be ill on the day of the King's restoration, and anxious to see his Majesty, the affable monarch when told of her inclination actually condescended to stop at the tavern and salute her. It is also right to mention that Dr. Johnson met Jack Wilkes at dinner at No. 22 in the Poultry, which was then Dilly's, the bookseller's.

THE EXHIBITION OF OLD MASTERS AT THE ROYAL ACADEMY.

SECOND NOTICE.

THERE is a disposition among the art connoisseurs to cavil at the way in which the pictures at this Exhibition are placed. They should have been arranged, say they, according to country or school, or in chronological order, and thus the public might have been instructed and amused at the same time: why should our modern painters have to support the trial of being placed with the Italians, or with the Dutch? The natural answer to this is, Why should they not, since surely in our own minds we must place them somewhere? That they should be able to bear this juxtaposition in an exhibition as well as some of them do is more likely to raise than to lower them in our estimation. Besides, does it not excite a worthy emulation among living painters, so to strive in their art that they in their time may compete with the old masters, and do honour to the art of their country? We understand that in a second edition of the catalogue the Academy intend to place a notice, remarking that they have named the pictures as they are called by their owners, but do not give their sanction to such naming in every case. With regard to the much-talked-of Turner, No. 40, "Italy," we suspect that not only the Academy but the art world in general will find much difficulty in naming it. We have heard it ascribed by connoisseurs to be undoubtedly by three or four different painters. It is astonishing, now that doubts have been thrown upon this picture, how that the merest baby in art-knowledge "is SURE, the moment he saw it, that it could never be by Turner,"—how he declares that "it is a meretricious work, too hot, too leaden," &c., &c.—whereas, whoever may have painted it, it is a picture of real power and much merit. One thing is curious in the method of painting, which is, that it is too universally glazed. Now, Turner's pictures are rarely, if ever, glazed. On the whole, we are inclined to suspect that it may be the work of a water-colour painter. There are three Cromes in the first room; perhaps the best is No. 35, "A Landscape," with figures; it is much assimilated in tone to the pictures of the old masters, without becoming too heavy or black; the colours have darkened and enriched with time. No. 41, Reynolds's portrait of "Lady Ormonde and Child," is a very fine work. No. 51, "Hampstead Heath," is a very beautiful little Constable, evidently painted from nature on the spot. It is one of the most highly finished of this artist's works. Constable is well represented in the present collection, and his fine qualities being thus made known he ought to rise in public esteem. No. 14, "The Haywain," and No. 44, "The Cenotaph at Coleorton," are grand specimens of his art. It was while painting this latter picture that Constable complained of being put out of all feeling for his work, by the inopportune visit of a "little cockety-hoop of a man," a critic, showing that then, as now, artists are of an irritable and impressible disposition. No. 13, Ruysdael's "Pool," is, perhaps, the most striking work in this room. Surely never painter gave with more truth and poetry the clear, calm, depths of still water. In Gallery II. is a most beautiful Cuyp, belonging to Lord Westminster, No. 66, "A View of Dort." The mellow light and the grey walls of the old buildings are both marvellously well rendered. There is in another room, though, perhaps a still finer specimen by the master, No. 209, "A Calm." The *on dit* about this picture is that it formed one of a collection bought by five gentlemen for £23,000. On dividing the pictures again amongst themselves by auction, the first bid made for this little Cuyp was £2,000, and it finally became the property of Mr. Baring, at £2,500, and although its monetary value is a poor one by which to judge a picture, this is certainly a priceless and perfect gem of art.

But to return to the second room: by the door, on the right, is one of Raeburn's best portraits, No. 54, "Mrs. Gregory." This, though somewhat painty, and treated in two pretty a manner, is, for Raeburn, a work of more than average merit. Near to it is placed a rather singular likeness of an old lady, No. 60, "Lady Harrison," by Sir Joshua Reynolds. Probably this portrait was painted when Reynolds had not as yet thrown off the custom of his master, Hudson, of painting the face and then allowing the dress to be added by a drapery painter; certainly the drapery has not the grace or even the air of being the work of Sir Joshua. Dyce is not so fortunately represented in this collection as we could wish; we should have preferred to have seen his "Good Shepherd" exhibited, or even his "Bemerton" or "Young Titian," in preference to No. 59, "Jacob and Rachel," which is but a small replica picture. Dyce painted this subject four times, and the best of the four, a very beautiful work, was in the Exhibition of 1862. His other picture here, "Joash Shooting the Arrows of Deliverance," is a fine and grand conception, though it surprised us to see the body of Joash of so inordinate a length; this is a curious mistake for the most academic of our painters and such a good draughtsman as Dyce to make. The first picture which attracts our attention in Gallery IV. is "The Daughter of Herodias," by Titian, No. 189. It is as fine as Raphael in drawing and lovely in colour. The woman is very beautiful, yet her beauty has something dreadful in it; the ferret jaw, and tight mouth, the finely lined eyebrow, the compact but little head, the defiant look in her eyes, and the sternly confident way in which she holds the head of the Baptist on the charger, all these combine to seize upon the imagination and impresses and disgusts at the same time. Did Titian paint this head from some young Venetian beauty? If so, and it is a portrait, surely there must have been something terrible in the woman's history. Nothing finer was ever painted in the Florentine school than the wonderful Veronese placed in the centre of the room, No. 188, "Our Saviour on the Mount of Olives, supported by an Angel." The subject is a very painful one, and it is placed before you with such awful distinctness that a public exhibition seems hardly the place in which to see it. Mr. Baring's Annibale Caracci, No. 194, "The Madonna and Dead Christ," though of an eclectic school, and seeking to combine all excellencies, fails in the tender and touching qualities in which the Veronese so excels. It is more posé. The mother bending over the dead Saviour is forced in expression, and the extended hand has not the action of unconscious grief; the fat little angels, too, are neither ethereal nor spiritual beings; yet this is one of the finest works of a school which fifty years ago was thought by connoisseurs to be second to none. The great qualities of the Dutchmen are very remarkable in this room. They are the greatest painters in the world, if we except perhaps one or two Venetians; the word painter here must be taken only of course in its technical sense. Let us compare Teniers and Ostade, both so great in such different ways. Teniers' execution is the most facile possible; he paints directly and with a onceness. Ostade, on the contrary, is as subtle in his methods as Titian; he prepares his different colours for glazing with the most varied precision, and lays his grounds with true Venetian feeling. De Hooge, again, works with astonishing minuteness, while he never loses sight of the effect he wishes to produce. He paints each brick, but does not forget the glow of sunshine which he intends should cover the whole pavement. The detail, though strictly given, is subordinate to the mass. No. 208, "The Tavern Door," is a fine specimen of the master, rich and glowing in colour; so is No. 175, "Woman and Child in a Street in Utrecht." It is rather sad that so little should be known of the life of such a truly great painter as De Hooge, whose works have attained to such celebrity. No. 190, "A Philosopher in his Study," by John van Eyck, is a very beautiful specimen of the master. There is a still finer van Eyck in a farther room, No. 326, "Celebration of High Mass." The finished and devout expressions of the faces should be observed; note, too, that each individual stitch in the worked carpet is painted, though the perspective is quite ignored. Lord Ashburton's two Ostades, No. 216 and No. 217, should be closely studied by art-students, as also should be No. 202, "Playing at Skittles," by Jan Steen. No. 190, "The Female Artist," by Metzu, is a fine work. No. 218, "Cows and Bull under a row of Willow Trees," by Paul Potter, is painted from the same spot, only looking in the other direction, as Lord Westminster's "Dairy Farm near the Hague," exhibited here last year. Perhaps the finest Turner in this collection is placed in the next room, Gallery V. It is glowing with light. Over it hangs Mr. Billing's Murillo, a good specimen of the master, and not black. In Gallery VI. is placed Raphael's first picture, No. 307, "The Crucifixion," painted when the artist was only 17 years old. It bears the impress of Raphael's master, Perugino, rather than of Raphael. It is unfortunate that the dark hard-lined girdles of the two angels on each side of the cross give the impression that they are supported by iron bands. No. 309, "The Three Graces," by Raphael, is, perhaps, at once the smallest and choicest picture in the collection. Fra Angelico's picture of Paradise, No. 313, has much of the tender sentiment and sweetness always pervading his works; the delineation of the tortures of hell must have been, we should think, very adverse to his holy, loving nature, and very appalling, no doubt, at the time they were painted, but of course in our days they are viewed as so treated rather with curiosity than with terror. No. 303, "Peter offering the Keys to the Infant Saviour," is, perhaps, the best picture by Crivelli here. He is a master of whom little is known, but his pictures have much that is remarkable in them. In this gallery, too, are placed many pictures by Perugino. The simplicity and grace of his compositions, and the purity and elegance of some of his figures, leave a forcible impression on the mind. His colouring, too, is very beautiful, notwithstanding the almost entire absence of any gradation of tint. His works should be carefully studied by the lover of art, for many germs of those beauties in which his pupil Raphael so excelled are traceable in this master's pictures. There is a curious work in this room by Blake, No. 285, the title of which is too long to give. To our minds, it is not a favourable specimen of the artist's powers. Some of his illustrations to Dante are of a much finer quality, though, being in water-colour, they would, perhaps, be inadmissible. Blake is said to have asserted that by forcing his darks he could paint on a mahogany table instead of a canvas, and make the mahogany tell as the light of his picture; to carry out, we suppose, the truth of the painter's adage, that if you want light in your picture you must make it darker. He has not been very successful in this method of painting in the present work, and has been obliged to gild his high lights in order to brighten the picture. It is a mistake to name Holbein as the painter of No. 296, "Portrait of Francis the First." The portrait is evidently the work of Janet, who was a French painter of that period, many of whose best works have, out of his native country, been ascribed to Holbein. The lecture-room contains one of Sir Joshua's most admirable pictures, No. 285, "Portrait of a Child in a Mob-Cap." It is simply beyond praise. Compare it with the mannered prettiness of Greuze's children, Nos. 392 and 398. Does not the quaint simplicity of the little maid in the mob-cap literally put them to shame? and yet the Greuzes are very beautiful in their way. Murillo's six pictures, or rather sketches, of "The Prodigal Son," are placed in this room. We call them sketches, for such they are, and as such do credit to Murillo's talent. Until two years ago Lord Dudley possessed but five of these works, when being in Rome and seeing the sixth in the Papal Collection, he suggested to the Pope that to make the series complete they must one or the other give up their treasures, whereupon His Holiness made him a present of No. 6, and Lord Dudley presented in return a thousand pounds to the Pope's charities. Space fails us to give a more detailed account of the many admirable pictures contained in the present collection, and we can only beg our art-loving readers to take an early opportunity of visiting the exhibition, in order to examine and criticise the works for themselves.

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ON THE ARCHITECTURAL TREATMENT OF RUBBISH.*

(*Concluded from page* 18.)

MORTAR.

I REALLY hardly know how to begin my crusade against mortar. I cannot say that we are getting worse and worse in this respect, for I am afraid that London mortar has always been to a great extent a snare and a delusion. I was watching some time back the old houses in Carey-street coming down to make way for the Law Courts, and on examining the brick rubbish on the site I found that the mortar, nearly all of it, crumbled into dust on being handled. The fact is that the purer limes, such as are known as "fat" limes, never can be made into really good mortar, and if the mortar made a hundred years ago was bad, it is sad to think how much worse a great deal of our modern mortar must be for want of due care in its preparation. I find that in Langley's "Price-book" for 1750 (our old friend Batty Langley) an equal amount of sand was the utmost it was thought possible for lime to carry, and when pit sand was used the lime always predominated. We now commonly specify two or sometimes three parts of sand, and I know from careful experiments that a skilful labourer will make one yard of lump lime carry 3¼ yards of pit sand, in spite of any specifications or directions to the contrary. But it was not in the materials and their proportions that our fathers so greatly surpassed us in the preparation of their comparatively worthless mortar. When we read of the time which was to be devoted to the beating of it, the slaking and softening of the lime, and the many precautions to ensure its excellence, we feel how far we are behind them in this respect. I have no wish to make out too strong a case against our mortar, but I will appeal to your own observations on the subject. Do we not invariably find the preparation of the mortar left to the most ignorant labourer on the place? Do we not find him to possess the haziest possible notions about proportions? Is there not in almost all cases a tendency for sweepings and suspicious rubbish of all kinds to get near the mortar heaps? And does not this rubbish very frequently disappear when our backs are turned in a remarkably sudden way? Our mortar is truly the veriest rubbish, and it is a bad kind of rubbish, for it pretends to be, and somehow it has come to be considered to be, good and suitable for the purpose. I am almost certain that much of our mortar might be very advantageously replaced by well-tempered clay. If this were well raked out of the face-joints, and the work then pointed with Portland cement, we should get a better wall than we do now with the mortar made of lime and road scrapings. The fact is, our mortar-making is the most hap-hazard and chance kind of work which goes into the building, and yet we must all admit that there is nothing which is more important. Here, of all places, we want to substitute the Irish labourer with some simple machine or mill, for milled mortar is, whatever may be the quality of the lime, a hundred per cent. better than that which is made by hand. It is quite true that we can employ the ordinary edge-runner, and grind together our sand and lime, and for large works this plan of mortar-making is very commonly adopted; but as yet we have nothing that I know of for machine-mixing the mortar which is suitable for small works, or applicable in the case of a confined city site. The ordinary system of "larrying" together the lime and sand mixes them, but very imperfectly, and the man's strength is very wastefully applied. If we can give him some simple mill, with a handle to turn, he will do twice as much work in a given time, and produce a much better material. I do not intend here to describe such a mixer as a pugmill would be, for I have seen mortar made in a pug-mill which was very indifferently mixed. What we want is a grinding and rubbing together of the ingredients, not a simple turning of them over. Now I have not as yet spoken of the lime and sand, which of course are of even greater importance than the mixing. To begin with the lime, avoiding all unnecessary chemistry. What we want in mortar is that it should set well, and I find that amongst the workmen themselves there is a great deal of misunderstanding about this setting. Shortly after a brick has been bedded, we find the dry brick suck away from the mortar the greater portion of its moisture, upon which it stiffens, and becomes tolerably hard to the touch, and this is very frequently spoken of as setting. In much of the mortar we use now, this is all the setting we ever get. Except in the case of the grey limes and the lias, which set as silicates, we never get a real set due to the carbonisation of the hydrate, such as renders the Roman mortar so hard, except with the lapse of ages. I am certain that mortar with so much sand as we are now in the habit of using would never acquire any great degree of hardness from the decarbonisation of the lime. One thing I am quite sure of is this—that the chemical changes which may render our mortar of any value can only take place in the presence of a certain amount of moisture, and that the use of dry bricks, which drink up all the moisture, is fatal to good and sound work. "Wet bricks and stiff mortar," says the theorist. "Dry bricks, sloppy mortar, and plenty of grouting" (that most fatal practice), says the workman. Do what you will, I will defy any man to prevail upon the workmen to wet the bricks. They complain that wet bricks cut their hands all to pieces, and persist in using perfectly dry bricks, even in the hottest sun. "Grouting" is a sort of tradition with specification writers, and should never be permitted, as it is entirely a mistake. It washes the mortar away from the bricks, prevents the proper adhesion of the joints, and does all sorts of mischief. For all out of door work, we should use limes which contain such a proportion of clay as to render them dark in colour, such as the Medway, Sussex, or the lias limes. Almost every lime-burner of any importance can now furnish his customers with an analysis of his limes, and we should reject any which fall short of 10 or 12 per cent. of clay. The grey lime from some parts of the Medway, which contains as much as 18 per cent. of clay, makes capital mortar, and we all know the excellence of the lias lime, with about the same quantities of clay and iron. I do not wish my paper to read like a chemical lecture, but I am anxious to point out that the pure limes are absolutely valueless with the amount of sand we now use, and that to get good results we must choose a lime which, from the presence of natural silicates, can set or become permanently hard from the formation of hydrated silicates in lieu of any hardening due to the reconversion of the lime into a carbonate or the condition in which it was found. The hydrate of lime and sand, the condition in which mortar from pure lime goes into the works, is, and as far as we can judge ever remains, a dusty powder when dry. I have yet to speak of the sand, and I must not say more than a few words upon this subject. We are extremely well off for sand in the London district, and there should never be any cause of complaint in this respect. The best sand for use with our grey and chalk limes is a good sharp washed pit sand; I say pit sand, because we can never be sure of the river sand. Some of it contains so much dirt, coal dust, and worn sand, that we get much safer results with pit sand. As long as the pit sand is free from loamy particles it makes a better mortar to work with than the river sand, filled as it is with extraneous matter. One thing to be remembered is that the coarser and sharper the grain of the sand is the better will be the mortar, and this fact at once shows that to substitute for the sharp sand the scrapings and sweepings of our thoroughfares will not improve the quality of our London mortar.

I might say a great deal about rubbish in the form of stucco, stonework, iron, and slate; in fact, very few of our materials would escape any rubbish heap. But I must pass them over, and say a word or two about

WOODWORK.

Our carpenters' and joiners' work shows sad signs of deterioration both in materials, and, to some extent, in workmanship. I do not wish to imply that the carpenters of the present day are not much better supplied with mechanical appliances for carrying on their trade than were their brethren of a hundred years ago. This would be an absurd position to take up. But I do most fearlessly maintain that labour-saving machinery and the various contrivances for producing cheap joinery tend to promote "scamped" work. I think that most of you will also agree with me that the introduction of cheap foreign timber has done us more harm than good. However much we may sneer at the clumsiness and waste of material in old carpenters' work, there was a genuineness and a thoroughness about it which we miss entirely in modern woodwork. I would never (if I could afford it) allow either nails or glue to be used, for I am sure that there is nothing like the old-fashioned trenails for fastening and securing the different parts of the work; and what with the "priming" with which they are so industrious in smearing everything over "at the shop," and the shaky and green fir timber, and the glue and whiting in the shape of "stopping"—why, it is quite impossible to say what rubbish you may not be getting. You will think, perhaps, that it is all very well for me to exclaim against our modern work without pointing out any remedy, or you may think I wish to go back to Mediæval simplicity. I have really no such wish. I know it is quite useless to shut one's eyes against the fact that you can get a "handsome" moulded door made for about half a crown by a steam joiner, but I see no reason for associating bad materials with cheap workmanship, which, however, one only too frequently gets nowadays. To give an instance. In a large panelled gateway recently put up to form an entrance to the Kensington Gardens (every panel of which was glued up in two pieces, and which, to look at, was a nice piece of work, and admirably painted), there was, in less than three months, a fissure of about ¼in. wide in the centre of every panel, and this is no uncommon case. In fact, so fond are our builders getting of green wood that they actually have the work put together, primed and everything, before it comes into the country. In another case, in a large roof over some workshops at Leicester, all the struts had shrunk from their bearings, and this, mind, in the long way of the grain, a direction in which there should be scarcely any shrinkage. The only way I see out of the difficulty of bad woodwork is to discard paint, and trust to staining and varnish. We cannot get the good old oak of the times of our forefathers, but if we do not take some steps to defend ourselves we may shortly have to do without wood at all, and take to iron for everything, as the 'cute Boston men are doing. I may perhaps be told that bad materials and bad workmanship to a certain extent bring with them their own punishment. To bad bricks and mortar we undoubtedly owe that graceless sham known as stucco, which does for the bricklayer what "priming" does for the joiner, viz., temporarily conceals the shortcomings of his handiwork. How many a deluded victim has purchased a smart and substantial-looking place-brick villa, with the most attractive-looking internal fittings, only to find in the course of a few years that he will have to spend as much as the house cost him to put it into repair! I am convinced that so long as we sanction the use of rubbish as a building material, so long will men be found to supply us with it to any extent, and I hope that if I have occasionally put my points rather more forcibly than I am warranted in doing, you will excuse me, knowing that my sole motive is to expose a practice which has become only too prevalent, and which I have have termed "The Architectural Treatment of Rubbish."

A brief discussion ensued, in which Messrs. Douglass Mathews, C. H. F. Lewes, W. F. Potter, Phené Spiers, Rhodes, Clarkson, Quilter, and the President took part, and the thanks of the meeting were unanimously accorded to Mr. Redgrave for his paper.

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An extension of the sea-wall at Exmouth is proposed by the Rolle Estate Trustees.

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* Read before the Architectural Association by Mr. GILBERT R. REDGRAVE, A.R.I.B.A.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 6.)

PLATE 17.—CONSTRUCTION OF A WREATH FOR STAIRS, HAVING SIX WINDERS TO LAND ON A LEVEL FLOOR—THE TANGENTS ON GROUND PLAN MAKE ACUTE AND OBTUSE ANGLES.

FIG. 1 shows the joint thrown from the centre. Cylinder twelve inches. Centre line of rail struck with a radius of seven inches. The narrow end of winders equals half a square step.

This drawing is almost a repetition of that already given on preceding plate.

The object is to show that a joint may be made on any part of circle without in any way affecting the appearance of the wreath. In some situations it is even preferable. Take, for example, stairs that have been badly planned; steps and risers standing in every position but the right—the whole misconstructed, and presenting difficulties which may be overcome by throwing the joint from the centre, in order to produce a proper wreath.

This drawing is simply intended to illustrate a method which may be successfully adopted when required.

Let us proceed with the mould and have a joint, say at C. This gives A, B, C, D for tangents, and D 6 as ordinate for upper part of wreath on landing. The ordinate for lower part is unknown until tangents are unfolded, as shown at Fig. 2.

Let the letters A, B, C, D on the right correspond with those on plan. Tangents are shown spread out on a board, as in laying out a string. The pitches of wreath being 2, 3, 4, 5. The height of lower wreath is given by P 2. The direction for its ordinate being P N. This transfer to Fig. 3, as shown on the extended tangent P B. Make right angle from P equal to radius on plan. Let tangents C B and B P correspond with those on plan.

Ordinate is now drawn through C, and seat made square with it. Height equals that at Fig. 2.

Remainder of drawing is in every particular precisely the same as that given on preceding plate.

Tangents on mould, as proved by 2, 3, 4, being equal to pitches having corresponding figures at Fig. 2.

Notice, that in obtaining bevel T for joint 4, the line marked "Height" and tangent 3, 4 are nearly parallel, but not quite so. The exact line could not well be shown without confusing drawing.

See to this, should it ever occur in actual practice; and remember that accuracy in obtaining and applying bevels is one of the most important points in hand-railing. Square sections show joints and application of bevels.

Fig. 4 exhibits mould for upper part of wreath Let tangents C, D, L equal C D 6 on plan. Extend D L. Then draw C R parallel with it. Let L K equal height K 4, Fig. 2. Join K R. This is the pitch.

Let major axis of ellipse be drawn through the centre, and parallel with R K. This will be found more practical for construction of mould than having it on first pitch. Observe that the tangent 5, 6 on the mould when in position falls level, and is equal to L D; while that of 4, 5 stands on pitch; and, to be correct, must equal corresponding figures at Fig. 2. Have three or four inches of straight wood on wide end of mould, as shown.

The bevels and their application to joints have been already explained.

It may be noticed at Fig. 1, that A N being equal to P N on the right, gives ordinate N C. Then the lines drawn through centre of balusters on the left, cutting tangents, and parallel with ordinate, give a direction to transfer position of balusters from plan, to that of winders on right; showing their length, standing under pitches of wreath.

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DUBLIN.—The Lord Lieutenant of Ireland visited the Royal Dublin Society's School of Art on Tuesday week, and inspected the designs, drawings, paintings, &c. of the pupils attached to the school. His Excellency was conducted over the building by Mr. Steele, who stated that the pupils of the Royal Dublin Society's School had gained a greater number of prizes than those of any other school in the empire with the exception of Kensington.

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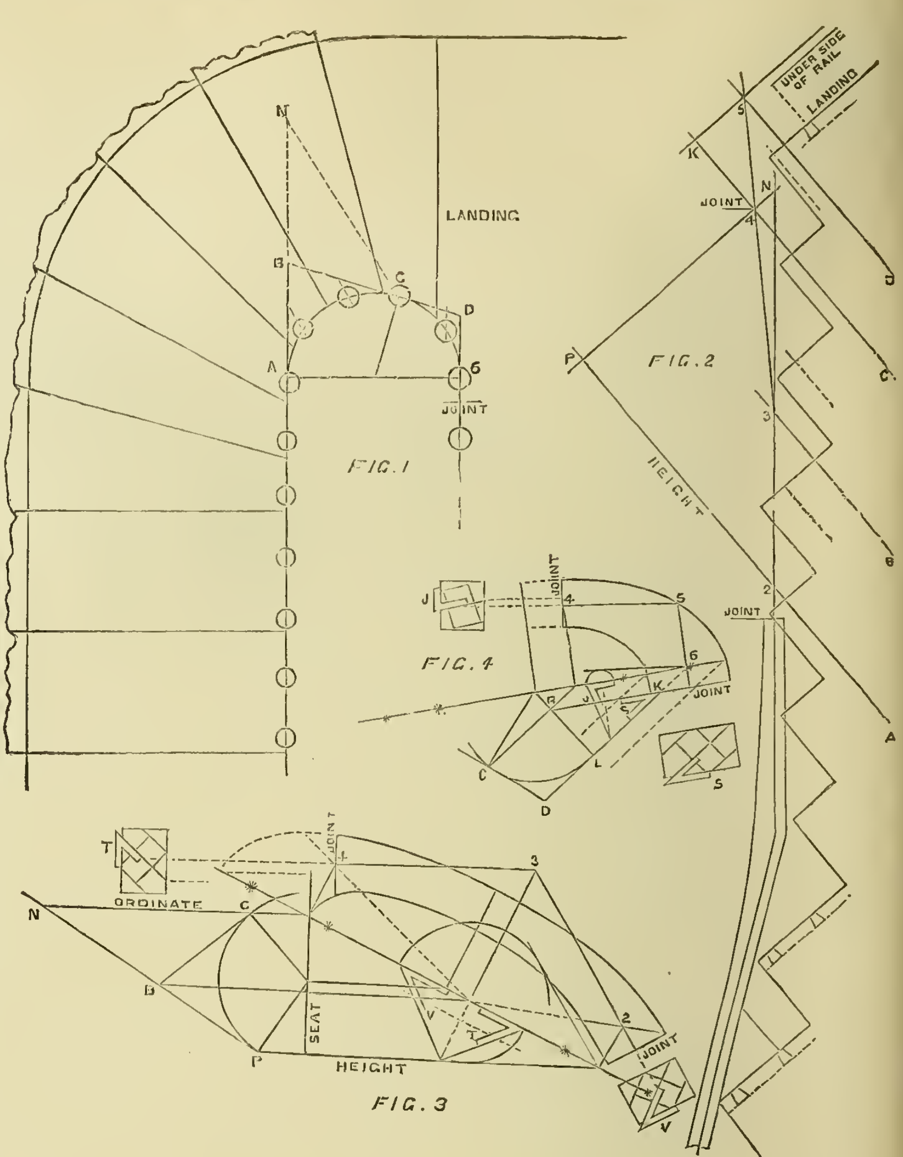
* This series of articles is a reproduction of ROBERT RIDDELL's work on the subject, published in Philadelphia, and by Trübner and Co., London.



NEW ELEMENTS OF HAND-RAILING.—PLATE XVII.

HOTEL DE VILLE, TOURCOING.

OUR illustration is a front elevation of an Hotel de Ville for Tourcoing, France, for which the first prize was obtained in competition by M. Leon Rohard. The building is 26m. 10 wide by 47m. 35 deep. The belfry—an indispensable accompaniment to the public halls of the towns of the Northern Departments of France—is of wood, so constructed to suit the pockets of the inhabitants, according to the *Revue de l'Architecture.*

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PHILIP HARDWICK, R.A., F.R.S.

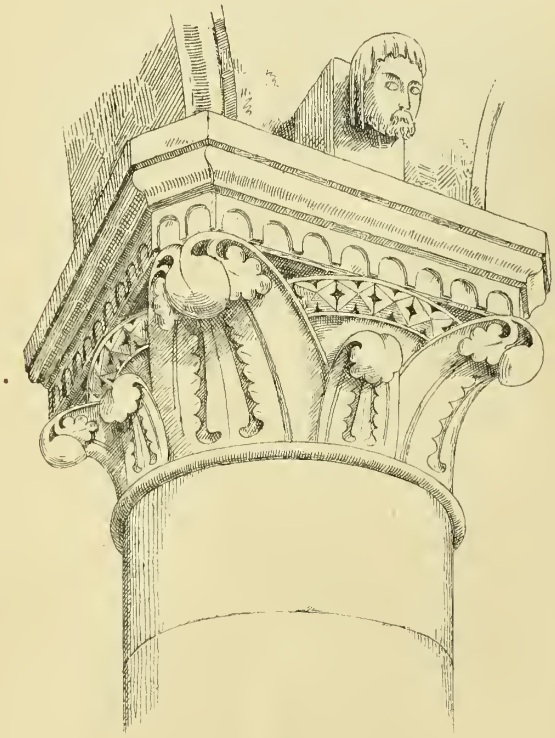
ON the 28th December died Philip Hardwick, one of the few architects who have attained the rare honour of becoming a member of the Royal Academy. He was elected an Associate in 1839, and a full member a few years afterwards. From 1850 to 1861 he held the office of treasurer and trustee to that institution.

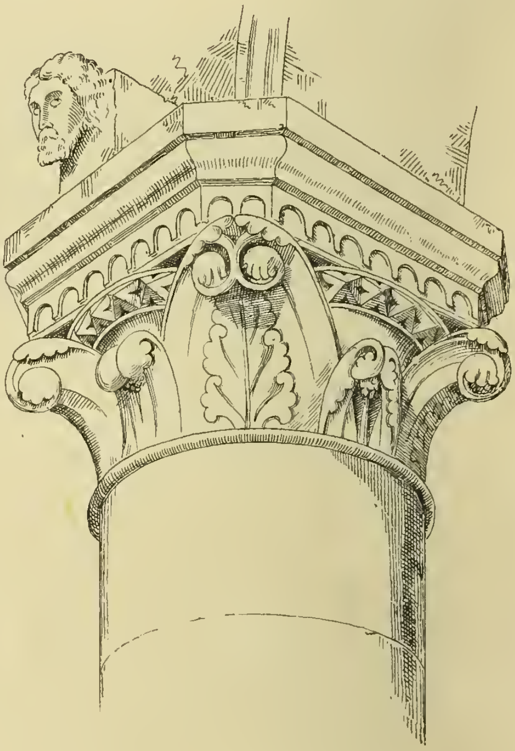
Mr. Hardwick was born in the parish of S. Marylebone in 1792. His father, also an architect, was a pupil of Sir William Chambers. Philip Hardwick attended Dr. Barrow's school in Soho-square, but while still quite young entered his father's office, and in 1808 became a student of the Royal Academy. In 1815 he visited the Continent, passing through Paris, then held by the allied armies. The Louvre, at that time the treasure-house of the spoils of European art, was at the time of his visit guarded by Prussian and English soldiers. The coincidence between the accompanying events of the opening and close of his professional career is noteworthy. Spending three years in France and Italy, he returned to England in 1818 and commenced practice. His earliest works of importance were the buildings for the S. Katherine's Dock Company. He was for twenty years architect to the Bridewell and Bethlehem Hospitals, but in 1836 was obliged to resign that appointment on account of the multitude of his engagements. He also held the office of architect to the Goldsmiths' Company, for whom he designed their new hall—a worthy specimen of hi great abilities, and his most successful work Among his other public works are the entrance-gateway to the London and North-Western Railway, in Euston-square, the Euston and Victoria Hotels, the Globe Insurance Office, and many others. He was a Fellow of the Royal Society and of the Royal Institute of British Architects, of which he was one of the founders. He received the gold medal of the Institute and a similar honour from the Commissioners of the Paris Exhibition of 1855.

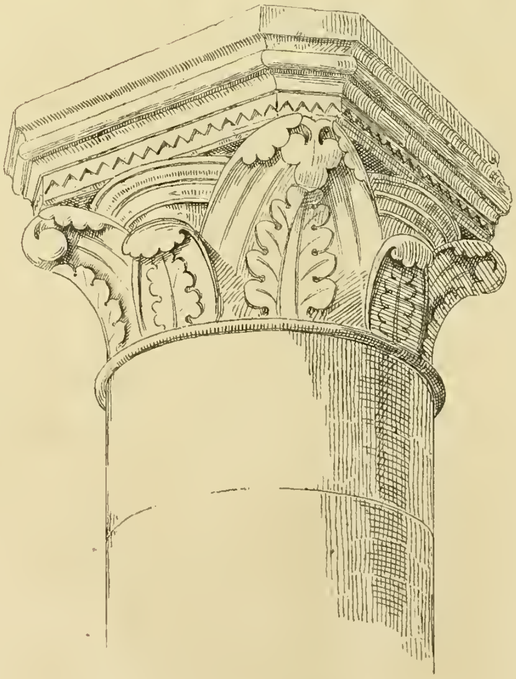
Mr. Hardwick's designs were mostly in the Italian style. He suffered during the last twenty years from the effects of a severe illness, which compelled him to abandon his practice as an architect to his son, Mr. Philip C. Hardwick, in in the year 1842, when he was engaged on the designs for the new hall at Lincoln's Inn, which was opened by the Queen in 1845. He continued, however, for many years to take to such practice as he could attend to in his own room, and, though with much bodily suffering, was unremitting in his attendance at committees and at the meetings of the Royal Academy, in whose proceedings he took a deep interest.

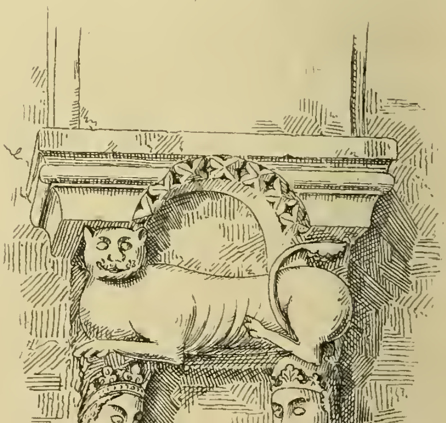
His death is a grief not only to those who were privileged to enjoy his intimate friendship, but to all his fellow architects, by whom he was most deservedly respected and esteemed for his professional ability, his high character, and his pleasant manner.

CAPITALS AND CORBEL FROM OAKHAM CASTLE RUTLANDSHIRE . .





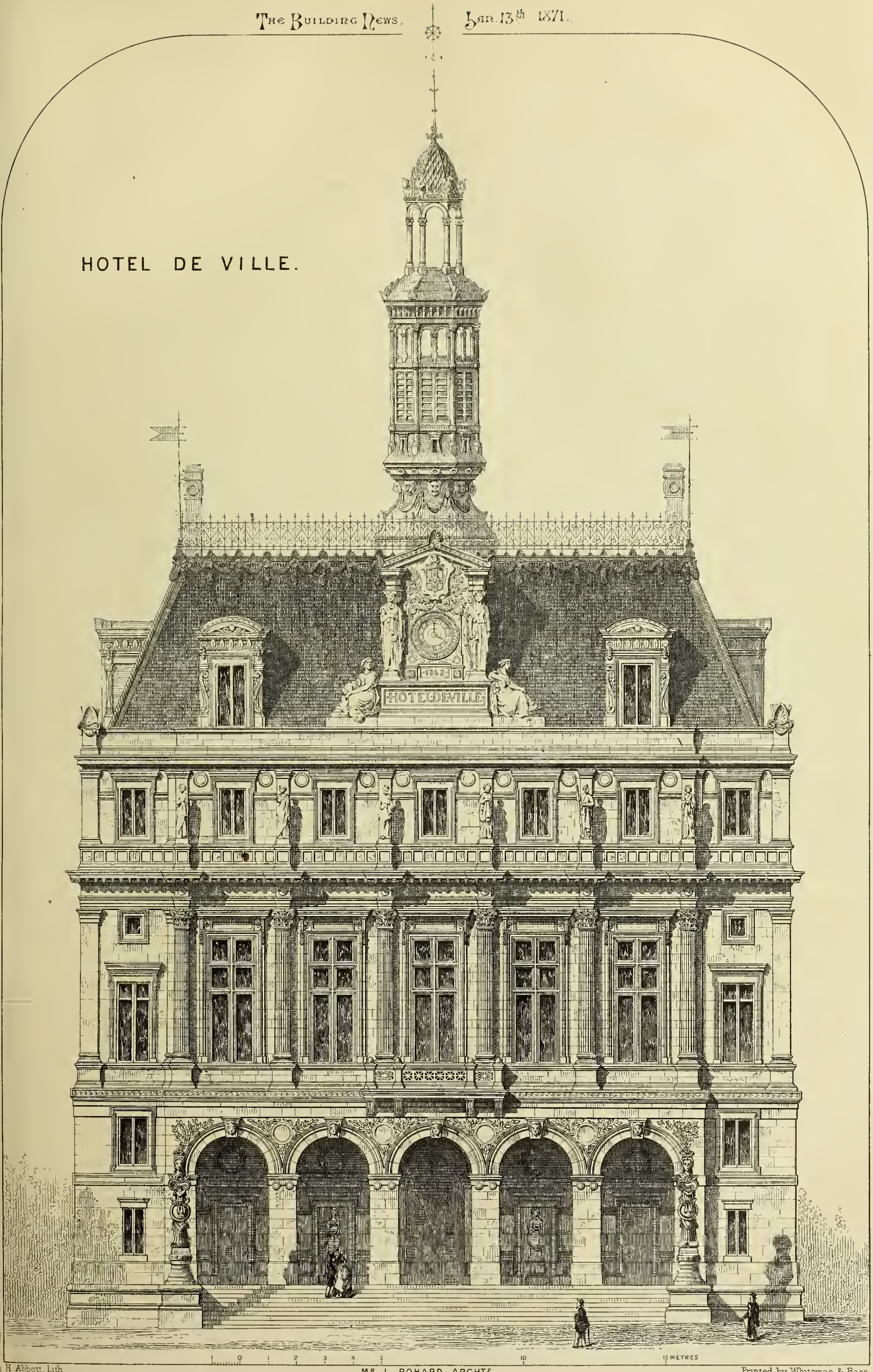




J. LANGHAM 1870

Photo-Lithographed by Whiteman & Bass London

HOTEL DE VILLE.



H Abbott, Lith.

Mr L. ROHARD, ARCHte

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Furniture & Decoration.

ON THE APPLICATION OF COLOUR TO THE DECORATION OF CHURCHES.

BY "AN EXPERIENCED WORKMAN."

IT may not be out of place here to say a few words on the application of colour to the decoration of churches. We are more particularly led to the consideration of this subject in consequence of the recent publication of a series of four letters "On Colour in Churches," by Mr. Edmund Sharpe, M.A., F.R.I.B.A., in which the writer endeavours to prove that colour is a positive evil, that it destroys all architectural beauty and obliterates all detail; that colour, instead of aiding and assisting the play of light and shade (as most of us have hitherto innocently believed), does in fact destroy it altogether; and in support of his position he instances first some coloured decoration on the boards and rafters of the triforium of the choir of Ely Cathedral, which, according to his description, is most certainly an abortion in colour decoration; and secondly, the church of S. Cross at Winchester, which as an example of church decoration (an art, according to Mr. Sharpe, lower than that of the sign-painter) is equally bad as the first example. Now this may be true enough as far as these two examples are concerned. We are not in a position to dispute it, inasmuch as we have not seen the works, and they possibly may be gross examples of the misuse of colour, of which there are unfortunately so many in this our day; but we do dispute both the premises and the conclusion derived therefrom. It does not follow that because one or even a hundred examples may be brought forward of its mistaken and ignorant application, that, therefore, colour should not be used in churches, or in aid of interior decorative architecture, and as the pamphlet named is being extensively advertised, and is, we think, calculated to do much harm, especially when we take into consideration the high authority from which it proceeds, we have felt ourselves bound to enter our protest against the doctrine taught therein. The question whether colour should or should not be used in churches is of great importance, in whatever light we view it. It is either a legitimate and pure means of beautifying the house set apart for the worship of God, or it is a desecration of the sacred edifice. That question is too wide and of too much importance to discuss in this paper, and in considering the matter here we would confine ourselves as far as we can to the question as it affects the development of form and the decoration of our places of worship, for in considering such a question we cannot confine it exclusively to this or that style of architecture—not to the cathedral or the conventicle—to this or that denomination. We must consider it simply on its own merits, as to whether colour should or should not be used to develope and assist the detail of ornamental forms.

Mr. Sharpe says, "If you wish to take all light and shade out of a moulded arch, you have only to paint it; all the glorious effects produced by a flood of sunshine on the rich series of mouldings that clothe and characterise our English cathedrals are utterly lost the moment they are painted. The delicate transitions from light to dark on a rounded projection, the sharp line of light carried along the bordering fillet, and the dark shadow by means of which the deep adjoining hollow throws the two former into high relief, are altogether lost in a painted arch." This conclusion, so dogmatically set forth, we utterly dissent from, as being contrary to fact, to experience, and to the unalterable laws of colour. If Mr. Sharpe means the paint he condemns to be gloss colour we agree with him, because glossy or varnished colour reflects the light both from hollow and round; but if he means his remarks to apply equally to flat or dead colours, then we are quite certain he is mistaken, for it is a fact beyond dispute that certain colours have an affinity for light—so much so, that when the light touches these colours they appear to advance and stand out prominently, no matter in what situation they are placed; while another class of colours appear to carry back or cause every member upon which they are placed to recede or retire. Does Mr. Sharpe mean to tell us that if the colours which advance are placed upon the projecting member of a moulded arch or any enriched surface, and the colours which recede are put into the hollows and interstices or sunk parts of the mouldings, that thus we produce only flatness, and neutralise the effect of light and shade? If he means to say this (and we confess we can come to no other conclusion according to the text), we must either conclude that Mr. Sharpe is one of those unfortunates who are partially colour-blind, or that he has been equally unfortunate in his experience. Let us take a simple illustration in proof of our position that colour not only beautifies but assists the development of form. We will take a marble figure and place it against a whitewashed wall or in a niche which is also white. Do we thus best display the beauties of sculptured form? Do we thus bring out the graceful undulations and curves of the figure? Do we thus produce harmony, or show out to the best advantage the exquisite outline of the figure, and do justice to the immortal genius of the artist? We answer No! a thousand times no! Precedent, practice, and even the commonest of common sense answers "No." Look around upon the earth, sea, and sky; what do we see? Not one uniform colour varied by light and shade alone. Not sameness, not uniformity; not black, nor green, nor white, nor red, nor purple, but a beautiful combination of harmony pervades all Nature. No colour-blindness is observed in the works of the Divine Architect of the Universe: with Him all things are harmonious. Where can we find a better teacher? Where can better instructions be found? It may be argued that these buildings are the work of man; true, but they are all founded and modelled upon natural types. Our ornaments from the lotus, the acanthus, the vine, and the ivy. The Gothic arch is but the adaptation of the intertwined branches of the forest trees, which nature has interlaced and thus formed a model for man to copy. The rafters of the church roof and the intermediate spaces only represent the sky as seen through the branches of the trees. Do we build? We may yet go back with advantage to the bee and the ant. Do we wish to see how the most opposite and the most brilliant colours may be blended together so as to produce the most perfect harmony, and yet bring out the minutest detail? We must study the tail of the peacock, the plumage of the thousand and one birds of Paradise, and the wings of insects. The exquisite harmony which pervades all these, one colour contrasting and bringing out and purifying the other (for there can be no beauty without purity), all these go to prove that sameness is not, and cannot, be beauty. That paint, which means colour, according to Mr. Sharpe, destroys all the beauty of architectural form, is a mistake; for if we paint a cove, or the hollow of a series of mouldings of an arch or a cornice, with a colour which retires, and then paint the round beads or fillets, or other projecting members, with white or cream colour, or any advancing colour, we thereby not only increase the apparent depth and projection of each individual member, but we also assist the production of light and shade; all the delicate gradations of shadow are still there just as effective as if the whole of the members were white, but the colour intensifies them, for it is indisputable that gradations of shade are visible upon all colours; even black, if polished, will show, when the light strikes on rounded mouldings or ornament, an intensely bright line of white light, and even if it be dead black, totally without gloss, the gradations of light and shade will be distinctly seen upon it. We can well understand that if these colours are placed in the wrong positions, the advancing colour into the sunk parts of hollows and the retiring colour upon the projecting member, that the architectural features of the work will be destroyed. We daily see too many examples of this ignorant application of colour, but, as we have before said, if there are hundreds of these cases it does not necessarily follow that colour must not be used in churches. Another point for consideration is the fact that in the interior of churches the light which has to form the shadows upon the upper members of the arch, and on the roof, must of necessity come from below, which is not at all favourable to the development of form. Outside the building, on the contrary, we see every detail of the enrichment of tower, spire, and pinnacle, of door, of arch, and sculptured stone. Why do we see them so clearly? Simply because the light comes from above, uninterrupted, free to play upon and search out every coign of vantage on which to plant a brilliant fleck of light, and as a consequence sharpening the shadows so that every detail of ornament, and mould, and bead, and hollow stands out clear, sharp, and distinctly defined—every leaf, and flower, and joint, and projection—and it does not matter whether the stone be hoary with age or just fresh from the mason's chisel, the effect is the same. There is no colour required here to bring out detail; nature supplies the chromatic equivalents required to produce perfect harmony. Looking upon our grand old ecclesiastical buildings in this light, the eye and mind are alike satisfied, and are never wearied; but when we look upon the interior the condition and circumstances of light and shade are essentially different. Instead of the light falling in a flood of sunshine upon every moulded arch, and groin, and boss of our English cathedrals (as Mr. Sharpe beautifully expresses it), we find that in numberless instances the sunshine never touches them, only by reflection, by reason of the position of most of the window openings, and consequently the light which best defines the true form of the mould or ornament is absent. Bright sunshiny days are the exception in England, and with regard to the roofs of our cathedrals, how are we to get the flood of sunshine upon them? What are we to do for delicate gradations of light and shade upon those dull days, of which we have so many, when all is shade and gloom? Under these circumstances, without colour a church is of all places the most miserable-looking. It is not many years ago since we began as a people to emerge from the stupidity and barbarousness of the Puritan idea of art, when everything of beauty was considered a delusion and a snare—when colour, and ornament, and the beautiful symbolism of the Christian faith were banished from our churches, and the reign of whitewash commenced and reigned paramount. Does Mr. Sharpe wish us to return to the purity of whitewash? We should be loth to think so. We will go with him so far as to say that we would rather see bare and naked walls than colour misapplied, either in churches or elsewhere; but if colour and ornament be used with knowledge, judgment, and taste, and with due regard to its purpose and situation, we cannot conceive how a mind capable of appreciating the beauties of art and nature can object to the use of colour in a building which would otherwise be cold-looking, comfortless, and barn-like in its plainness, and in some cases particularly ugly. How many churches there are which, either from want of funds or from design, are left with the walls merely plastered, and without moulding to arch or window, with plain chamfered edges to the arches and splayed window openings. We should be glad to know how Mr. Sharpe would treat such interiors: would he leave them in their primitive state of nakedness, or would he improvise some decoration which would dispense with the aid of colour? If ever he does we should be glad to see it. In the meantime we have a simple and trusting faith in the effect and influence of colour in its application to the decoration of the house of God. It the first place, because by striving to make His house as beautiful as our puny efforts can make it we thereby show our desire to honour Him. Secondly, because, however skilfully we may execute these works—however high, according to our limited knowledge and skill, we may rank our work—we know that it falls far short of the perfection of divine workmanship, as shown in the meanest and most insignificant insect or plant that exists, thus leading us to comparisons which tend to produce feelings of humility and devotion. We have no sympathy with the man who sees naught but evil in clothing the walls of the sacred edifice with the glorious effects to be gained by the proper use of colour and design; to such minds beauty, in whatever form it may appear, is but an emanation from the bottomless pit, and the beauty of colour is nothing less than the sign-manual of the Scarlet Woman of Babylon. It were easier to persuade ten thousand women that they were ugly than to persuade such a mind that colour may be used with propriety to beautify and adorn the house of God.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE first ordinary general meeting of this Institute since the Christmas holidays was held on Monday evening last, Mr. T. H. Wyatt, President, in the chair. The ordinary routine business having been transacted, Messrs. Lewis Solomon and T. Heygate Vernon were elected as Associates. The deaths were announced of Mr. Philip Hardwick, R.A., and Mr. Lewis Vulliamy.

Professor D. T. ANSTED, M.A., F.R.S., &c., &c., then read the following valuable paper

ON THE RELATIONS OF GEOLOGY TO ARCHITECTURE.—CONSIDERATIONS ON THE SELECTION OF BUILDING SITES.

IN a former communication I pointed out some of the facts relating to the application of geology to architecture, but I limited my remarks on that occasion to the subject of building material. I desire now without further preface to give some account of another relation between these two sciences, in the hope that I may be able to make a few suggestions of practical value, illustrating the importance of regarding the structure of the earth and the nature of the rocks when it is intended to make use of its surface as a basis of operations for important architectural constructions. If it is necessary to give illustrative proof of the value of such considerations, I cannot do better than remind you of those remarkable leaning towers in Pisa and Bologna that have sometimes puzzled travellers. I might also mention the Cathedral of Pisa, close to the leaning tower, as an instance of a noble specimen of mediæval architecture, in which there are no straight lines, no horizontal lines, and no vertical lines, owing to a neglect of knowledge as to the nature of the foundations on a shifting alluvial bottom. The extent to which these fine buildings are injured by this neglect, which may almost be said to have reduced noble specimens of art to mere curiosities and toys, is not a subject to which I mean to do more than allude. It is quite true that with modern appliances doubtful foundations may be converted into good ones, but while we appear to have a case of perfect success in this endeavour in the Houses of Parliament at Westminster, such appliances are not always enough to render a mass of alluvial sands and gravel resting on a lower mass also of alluvial origin fit to bear every kind of structure that may be put upon it.

The selection of a site is not often left to the architect, but it is certain that his work ought to be greatly influenced by it, and that his opinion should be sought and his advice duly weighed before the site is decided on, or at least before the nature of the construction is altogether fixed. But, if this is so, it is clear that his education should enable him to give such attention to this subject as to justify him in reporting on it in all its bearings and from every point of view, and should enable him to take into consideration both general and local conditions. Among them the geological conditions ought not to be forgotten, for they will infallibly influence the cost of building, the sanitary state of the future building, the methods available for improving what is unsatisfactory, and making the best use of natural capabilities, and according to the nature of the exposure they will affect even the permanence and durability of the building. I include in speaking of geological conditions some which perhaps more properly belong to physical geography, but there will be no need to draw a distinction between them on the present occasion.

I venture to say that the site and the natural conditions of the site should to some extent determine the style of the building, the plan of the various substructures, and the uses to which they may be applied. The material to be employed also requires to have reference to these points, while the contrivances for drainage and (except in large towns) the nature of the water supply must be modified to meet the local geological peculiarities of soil and rock. It will no doubt often happen that one or more of these are fixed beforehand, and are independent of the architect, but he should be able to adapt the rest so as to take the best advantage of circumstances. In no case can geological considerations be safely neglected. I propose in this memoir to point out and illustrate as far as may be some of the more important of these relations of science to art. There is a close relation between the science I represent and the art you practise. The pyramids of Egypt rising from the dead level of the Nile valley, and the temples of the same country, cut out of solid granite, exhibit adaptations of style to the material available and to the nature of the site based on the strictest and soundest judgment. Pyramids constructed in Egypt of brick or limestone are fit monuments for sandy plains, and seem to require a vast expanse to justify their severity and formality of outline, and their total unfitness for decoration of any kind. Rock temples, whether in Egypt or India, are immediate results from geological conditions. Impossible, except in similar positions, they possess, owing to their adaptation to local circumstances, a simple grandeur which contains the elements of the highest beauty.

To perceive the growth of architectural taste and the history of classical styles, we must refer to the geological conditions as well as the climate of the country where these styles originated. In Greece limestone of a creamy white or grey tint is the prevalent rock, and the limestone forms a plateau intersected by ravines reducing the surface to a number of flat-topped hills of no very great elevation separated by rocky valleys. Owing to the long-continued action of the weather, the limestone rock is much broken at the surface, and loose blocks of all sizes abound everywhere. In many places the whole of a hill-side is apparently made up of loose stones, naturally squared, and resembling a broken wall. Under such circumstances square forms, upright columns, and walls with rectangular openings, are inevitable. The earliest constructions in such a country must have been, as we find they were, caverns with square entrances, built of such stones as were lying about. After these came the Cyclopean structures, often described and very familiar to the architect and the archæologist. Out of such buildings grew the earliest forms of cultivated art and the elements of all the classical styles in architecture. In the Island of Ithaca the buildings known as the School of Homer and the Palace of Ulysses are especially illustrative and instructive. In Cephalonia are other examples, especially in the remains of ancient Samos, and both on the main land of Greece and in the Morea there are many similar instances. The towns were built for protection on the hill sides, and on the hill-top was the temple and the Acropolis. The valleys were cultivated, and for the most part, no doubt, the people lived in them, except when their safety was endangered by the approach of an enemy. The necessity of constructing the temples and great public buildings on elevated sites, where they would stand out boldly in a clear sky and be seen through an atmosphere of exceptional purity and dryness; the necessity also of using as material the rock under foot or the marble in adjacent quarries, the facility with which rock and marble could be chiselled into form, and perhaps some reasons connected with the history of the Greek people and the sources whence their inspiration was drawn, must have contributed largely to the formation of those classical styles prevalent wherever Greek civilisation penetrated. On the other hand, the cradle of Gothic art being in the North, in a colder climate and gloomier sky, and the development of that form of art being in countries where the surface consisted of wide river valleys or great forest-covered plains, where roofs were necessary and where elevation was needed to give effect to a building, the constructive material at hand consisting largely of wood, and the stones available including a great variety both of limestone and sandstone, the art of construction took a different direction and adapted itself to these very different conditions. The limestones of the North are very different from those of Greece, and exposed to the weather they change much more. Then natural conditions, added to the difference in race, and all mutually influencing each other, have produced the peculiarities of Gothic architecture as the natural conditions in Greece resulted in the adoption of classical styles. I will not detain you longer by preliminary remarks, except to remind you that Indian and Chinese architecture belong also to the country, the climate, and the people where they have originated, and that many singular varieties of style, especially those adopted in Spain and Portugal, as well as the various Italian schools of architecture, might without much difficulty be shown to be derived from or at least greatly affected by the soil and climate and the material at hand for building. In Art as in Nature there is a process of natural selection which is the real governing principal of all varieties; there is an incessant battle to determine what novelty shall take possession of the field, and to what extent the old and recognised species shall be superseded by some new modification. Every country and every century has its own special characteristic, but the groups are determined to a very great extent by the country rather than by the races. The *genius loci* manifestly affects the result.

The nature of the rock greatly influences the soil and subsoil, both of which are derived from the rock, either directly or indirectly, and must therefore have some effect on the buildings constructed on the surface. This is the case partly as involving the question of foundations, partly as being closely related to the methods of under-drainage generally required to secure the stability as well as the healthiness of the site. The architect is no doubt less dependent on the rock than the engineer, but he cannot safely neglect it. In my work on geology, published so long ago as 1842, I pointed out the importance of considerations of this kind, and although then a very young man, ventured to offer some practical suggestions in reference to it. Since that time I have had constant experience in these applications of geology—much more indeed in engineering than in architecture—and I have often had occasion to regret that some knowledge of rocks did not enter as a matter of necessity into the education of all architects and engineers.

Rocks may be conveniently grouped into several divisions so far as they affect towns, public buildings, and private residences, and it must be remembered that in most cases the architect has to deal, not so much with the rocks themselves as with the weathered and often rolled fragments derived from them. There is in most parts of England, and generally in Northern Europe, a superficial mass of moved material and soil masking the real underlying rock, and this is often so thick that digging for ordinary foundations does not get through it. Such material may, with due precaution, be safe enough, and it generally is; but there are cases where it certainly is not, and these should be understood. They can only be understood by one who has at least made himself acquainted with the first outlines of geology as regards the stratification, upheaval, and dislocation of rocks. In some countries, and in some parts of our own country, the rocks are at the surface, and then the whole question is easily decided; but when this is not the case, a knowledge concerning them can only be obtained by studying a little the science that deals with them.

Certain rocks, hard and compact in themselves, are so far fissured and broken as to allow water readily to pass through them. Parts of the millstone grit and of the new red sandstone among sandstones, the oolites and parts of the carboniferous limestone among limestones, are of this kind. They are rocks not in themselves absorbent, or partially so, but very permeable, owing to their mechanical state. On such rocks foundations are of course secure, and drainage good and easy. If such rocks can be reached, they are safe under ordinary circumstances so long as they are horizontal; but if they are in strata inclining towards a valley, and the construction proposed is near or upon the slope, it is not seldom that additional drainage, and the weight of a building combined, may produce a slide, which will show itself in cracked walls and unsound foundations. Instances of such accidents are not rare. They may generally be foreseen, and to some extent provided against, by checking drainage between the strata, especially when the strata of stone are separated by films of clay, or by thin belts of sand. But they can only be known and prevented by the aid of that small amount of practical geology I desire to recommend.

Non-absorbent rocks, such as crystalline limestones and very compact grits and sandstones, are often so cracked and fissured as to let water drain into and amongst them, and in that case they are not often unhealthy. It is only when they have no outlet, so that the entering water stagnates in the rock till it evaporates, that they are likely to be injurious. I had an opportunity of observing a case in the island of Corfu some years since, in which a particular valley was entirely destitute of inhabitants, though it appeared in every way desirable, and at the time of my visit, in the spring months, was perfectly healthy. There was then a swampy bottom, but no miasma. I was informed by the people living near that a little later in the season the swamp dried up, and that soon afterwards miasma would begin to form, and would continue with a perfectly dry surface till the autumn rains set in. In this case the water could not run off underground, but though possible such conditions are exceptional. It is usual for hard limestones to be fissured and cavernous, and comparatively rare to find any large extent of such rock without a ready escape for water; but, on the other hand, compact sandstones, quartzites, schists, and other metamorphic rock and granites are very usually impermeable in every sense. The water is either retained on the surface, or runs off the surface, the mass of the rock—though not without receiving a small amount of water, which circulates at all depths through the agency of such fissures as exist—being practically unaffected by surface drainage. It will be evident that if the rocks, whether limestones or sandstones, or indeed of whatever nature, are not stratified, there will be nothing but fissures to carry off entering water, whereas in the case of stratified rocks much depends on the direction and amount of the inclination of the beds, and much also on the material occupying the spaces between strata. In these matters, which may be of real importance in planning and estimating the cost of a building, and also in determining the fitness of a site, the rocks must be consulted, and their language must be understood.

The case of clay greatly resembles that of compact hard rocks, which are non-absorbent, except that certain clays can be depended on and certain others cannot. The clays bedded regularly, and alternating with other rocks, are simply impermeable. For certain purposes they afford excellent foundations, and may be safely trusted. The same is the case with shales, which are altered clays greatly indurated, and not working up easily into mud, but stratified either with other shales or with sandstones. It must, however, be remembered that shales very easily and rapidly weather on exposure to the air, and that what appears to be a hard rock only to be removed by blasting while in the earth, will often be reduced in a few winters into a mass of minute fragments, converted into mud, and washed away by the first shower.

But though much important and useful information may be gained by the practical man by studying the condition of the rocks, their nature, and their relative position, it is in reference to what are called superficial deposits that a familiarity with the history of deposits is most generally available.

Buildings are of course constructed on all kinds of sites; but for many reasons modern towns generally occupy valleys, and are thus distinctly contrasted with towns of other days, which were much more commonly, and for equal good reasons, perched on eminences. Valleys now traversed by rivers are far more convenient than plateaus, as more accessible both by land and water, and if less safe in a military sense than plains in some respects, they are much more so in others. But whatever the reason, it is a fact that all important and large cities are on or very near large rivers. Thus the condition of the rocks on the surface of valleys has important significance.

It may be assumed, in the present state of geological science, that all such open valleys as now form or contain the beds of rivers have been reduced to their present shape and have derived their present condition from the passage of water through them. The beds or bottoms of the valleys have been cut out by water, the transported material with which they are covered has been moved by water, the cliffs or slopes of the enclosing hills, at whatever distance, have been brought into their present state by weather action, and small as the stream may be that runs along a narrow channel in a winding course between these cliffs or slopes, it has been sufficient in the course of time to bring about the result we see before us. All that lies immediately beneath the surface in the valley often to a great depth consists of material removed very gradually by this water, even if below that there is yet another deposit of water-transported material, consisting of clay, stones, and sand, due perhaps to ancient glaciers, or left behind by icebergs that have floated over or have been stranded upon it when many fathoms below the sea level. Sometimes there are streams entering the main river from side valleys, and each of these again has formed its channel and left its mark. The more sluggish the main stream, and the further it is from its source, the greater in proportion is the effect of such feeders. When they are torrents they sweep all before them, and deposit large stones with smaller gravel, clay, and sand. When they have had a more even course, they deposit fewer large stones and more mud and sand.

From this account of the history of river deposits, given in a very few words and requiring to be varied in detail for every stream, without exception, you may understand the nature of the material that you have to deal with in preparing foundations for a large and massive construction in almost every part of England where such buildings are likely to be erected. The clay you find may be alluvial clay deposited by the stream, or it may be boulder clay left behind by ice. It may thin out at any point, and give place to gravel, to loose stones, or to fine sand. Beneath it may be a quicksand. A certain number of tons pressing on the square foot of surface may and will cause the clay to slip away from the sands, or the run of an open drain through such sands may, by removing them, remove all support. When in the bed of the main stream, there may be a very regular deposit of clay capable of supporting any weight that could be put upon it, but the intervention of one of the old and forgotten tributaries may have cut away part of this clay for an interval, or prevented its formation, and thus one part of a building may be on a good clay and another part on loose shifting sands.

(*To be continued.*)

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"MADE GROUND."

MR. GILBERT R. REDGRAVE, in a paper read the other night before the Architectural Association, and the first portion of which appeared in the last number of the BUILDING NEWS, made a well-timed reference to the now only too-prevalent custom of erecting new buildings in the suburbs of London and other large towns on or in what is by no means euphoniously designated as "made ground." After the gravel or brick-earth found on the sites is all excavated, the pits are filled in with road scrapings and all kinds of decayed and decaying animal and vegetable matter. This rubbish, then, is the "made ground" on which hundreds upon hundreds of dwellings, from the small semi-detached cottage to the "stately family mansion," are yearly erected, regardless alike of sanitary and structural considerations. Dr. Stallard has emphatically protested against this practice, and notwithstanding that the correctness of his conclusions has been impugned by a member of his own profession—Dr. Trench—we believe, with Mr. Redgrave, that Dr. Stallard's view is the correct one. We are supported in this by the remarks made by Dr. Druitt—a physician of the first eminence—in the course of the discussion which took place at the Royal Institute of British Architects on Monday evening last, after the reading of Professor Ansted's paper on the selection of building sites. Dr. Druitt strongly condemned the practice of erecting buildings on "made ground," remarking that some of the most expensive districts of London were built upon rubbish heaps. If, he said, there be any truth in the fact that emanations from the soil would injuriously affect the health of the people living in the houses over it, it was incontestible that "made ground" was not suited for sites for dwelling-houses; and the fact of the practice of building on such rubbish having become so general during the last few years might be quite sufficient to account for one of the (even to medical men) most puzzling phenomena of the time—viz., the great increase of scarlatina of late, in spite of all the counteractive and preventive measures that have been adopted.

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ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the meeting on Wednesday evening, Mr. Syer Cuming in the chair, Mr. H. F. Holt read an admirable paper on the "Tames of Fairford." The object was to deal with the popular legends connected with the very fine windows in Fairford Church, by tracing the incidents of the contemporaneous history of this family, through whose munificence the windows were in all probability, placed there. The points demonstrated from a careful study of the wills of the chief members, and from other new sources, were that John Tame did not acquire the painted windows in 1492, or at any other time, by conquest, piracy, or purchase; that he did not found the church nor rebuild it; that he did not purchase the manor from Henry VII. in 1489; and that, in fact, he never had anything to do with the painted windows at all. Finally, that these windows were not ordered until after Midsummer of 1500, and were erected not later than 1505. The research displayed in Mr. Holt's paper was very remarkable, and the foregoing outline will suffice to show the energy he is still displaying in support of his original confident declaration, that these windows are due to the talent of Albert Dürer.

LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—The seventh meeting of this session was held at the Royal Institution, on Wednesday evening, when a paper was read by Mr. W. Parslow "On Science in Architecture," Part II.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.—A conversazione of the members of this society was held at the Museum, Taunton, on Monday evening last. The papers read were :—"Charles II. in Somersetshire," by Mr. E. Chisholm-Batten, and "The Dialect of West Somerset," by the Rev. W. P. Williams.

THE SOCIETY OF BIBLICAL ARCHÆOLOGY.—A new society has been instituted under the designation of the Society of Biblical Archæology. It originated in a meeting held on Dec. 9th in the rooms of the Royal Society of Literature, the proposed objects being "the investigation of the Arts, Archæology, History, and Chronology of Ancient and Modern Assyria, Palestine, Egypt, Arabia, and other Biblical Lands, the promotion of the study of the antiquities of those countries, and the preservation of a continuous record of discoveries now or hereafter to be in progress." Dr. Birch, of the British Museum, who occupied the chair on that occasion, explained that the proposed society would clash with none of the philological or exploration associations now in existence, but would have a distinct purpose—to concentrate and utilise the scattered materials connected with the geography, arts, and antiquities of the lands of the Bible, and to systematise the progress of archæological research in England, America, and the Continent. The society has already received the promise of the support of the most eminent living Biblical investigators, and another meeting will shortly be summoned for its complete establishment.

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WANDSWORTH COMMON.—After a long period of agitation the committee for the preservation of Wandsworth Common have succeeded in effecting an amicable arrangement with Lord Spencer, which will secure the common for public recreation and enjoyment. It is a matter of much congratulation to the neighbourhood that, instead of a protracted and costly litigation, a satisfactory settlement should have been achieved. To carry into effect this arrangement an Act will be submitted to Parliament next Session, which will convey Lord Spencer's estate and interest in Wandsworth Common to a body of conservators, who are to keep the common open and unenclosed.

Civil Engineering.

PROOF STRENGTH OF CHAINS.

UNLESS we regard the word chain to signify merely an assemblage of similar parts in which the total length bears a very large ratio to the lateral dimensions, the term suspension chain as applied to a bridge appears to be a misnomer. In all modern examples of suspension bridges the supporting chains consist either of numerous strands of wire twisted together so as to form a large wire rope, or of long bars united at their extremities by pins passing through eyes. The heads of the bar in which the eye-holes are made may be welded on the bar, or, by a new process, rolled at the same time with it. The latter is a very great improvement upon the former operation and should always be resorted to, notwithstanding the additional expense. It will be admitted that neither of these instances answer exactly to the popular idea of a chain, nor the signification which, constructively speaking, is generally attached to it. In a wide sense, anything that could assume the contour of the catenary curve would be a "catena" or chain, but as we are not at present inquiring into the derivation of the word, but into the practical value of the constructive agent it represents, we shall pass on to the more immediate subject of our article. Probably one of the most extensive and important uses to which chains are applied is in connection with shipping. Indeed, so well-known is the employment of iron in this capacity, that it is a very common occurrence to witness in the specification of a bridge, roof, or other engineering and architectural work, in which a large quantity of iron is wanted, the quality named as the "best cable iron." This naturally implies that the iron employed in the manufacture of cables is of a superior description, and when it is considered how many human lives, as well as much valuable property, is constantly depending upon the soundness and strength of chain cables, it is evident that they should be of the best material. Independently of these reasons, which are more than sufficient to render the above requirements indispensable, the nature of the strain to which chain cables are subjected is of a very trying description. It is far more severe than that which would result from the application of a weight merely requiring to be sustained at the end of the chain. The terrible and sudden jerks that cables are continually undergoing tax their strength and tenacity to the utmost. Engineers are well acquainted with the fact that a chain, or indeed any section of iron, will break with a much smaller weight when suddenly and violently applied than it would when the same weight is "laid on" gently.

Most of our readers are probably familiar with the appearance of a chain cable. The links are oval in shape, and a small cross piece, technically termed a stud, is inserted across them, in the direction of the minor axis or smaller diameter. This stud is of cast iron and its use is obvious. When the links are subjected to severe strain, they have manifestly a tendency to "draw," that is, to lengthen in the direction of the longer diameter, and to shorten in that of the shorter. The stud prevents this result and keeps the sides at their proper distance apart. The strain upon the link itself is tensile in character, but compressive upon the stud, which is thus made of cast iron, as the resistance of cast iron to compression, compared with that of wrought, is nearly double. On the other hand, the tensile strength of wrought iron is more than three times that of cast, so that each material is selected for the duty it can best fulfil. In previous articles relating to the strength of girders and various sections of iron, the influence of form or shape has been more than once conclusively shown to very considerably modify the actual resisting powers of the material. A very pertinent question in connection with the present instance arises. Does the conversion of the bar iron into the link of a chain increase or diminish the original strength of the metal? As a rule, iron is not improved, so far as either its tensile or compressive resistance is concerned, by any process of forging or welding. The science as well as the manipulative skill of the time have brought the two last mentioned operations to a degree of perfection that had not been attained to previously, but in spite of all the care and skill at our command, the "weld" can never be made so strong as the solid bar, or whatever other section of iron may be submitted to the process. At the same time, while it may be freely admitted that the "weld" is not equal in strength to the rest of the bar, it is a mistake to suppose that a "good weld" cannot be made. Some engineers and architects go so far as to set their face altogether against welds, but this is mere prejudice, and may very possibly arise from not possessing a thorough acquaintance with practical work and with the resources of a large and extensive "smithy." We have known instances in which a welded bar has been tested à l'outrance, and the solid bar has given way before the weld. This must be received as an exceptional case, but it nevertheless proves it is possible to effect this operation without deteriorating the resisting powers of the metal. To return to the question respecting the manner in which a bar of wrought iron is affected by its conversion into an oval-shaped link. Experience has shown, taking the average of superior and inferior qualities of iron, that a bar loses about a third of its ultimate strength by being converted into the link of a chain.

From what has been stated regarding the nature of the strains that chain cables have to undergo, and the serious liabilities contingent upon their parting, it will only be expected that the authorities should have taken some measures to ensure their being of sound and durable manufacture. Without for a moment underrating the claims of the mercantile department, the Royal Navy has to be first considered. The weight and size of the vessels, the complement they carry, and the large outlay incurred in their building and armament, demand that due care should be taken that they are not lost for the want of good cables. With the view of providing this requisite, the Government has adopted a test or proof-strain for all chain cables intended for vessels belonging to the Royal Navy. If we suppose a bar of a given sectional area bent into the form of a link, the proof-strain demanded by Government is equal to eleven and a half tons per square inch of the link. This test is calculated for one side of the link, so that the proof-strength of the whole link must be equal to the ultimate or tearing strain of the bar from which it is manufactured, supposing always the iron to be of superior quality. If it is not so, the link will not stand the test. This is a very severe test, but not more so than the nature of the case demands. In addition to the proof-strength of the chain being tested so far as regards the resistance to to a tearing or tensile strain, it is also submitted to ordeals of a more trying character, and which are more in consonance with the actual description of strain it will have to withstand when undergoing real work. Heavy and sudden blows are inflicted upon some of the links while they are under strain, in order to test the value of their resisting powers to shocks and violent vibrations. As in the course of their duty they will have to undergo repeated strains of this description, the precaution is not only justifiable but commendable. It may be urged that whatever may be the actual proof-strength of the iron it does not necessarily indicate the quality. A bar of iron may be sufficiently strong to withstand the proof-strain successfully, but its ultimate strength may be scarcely anything in excess. There would in such a case be nothing to spare, no margin of safety to rely upon supposing that on some occasion or other the strain in practice should exceed the proof-strength of the material. Some test therefore is evidently required respecting the quality of the iron. In fact, if the quality of the iron could be ascertained, à priori there would be no necessity for any tests whatever, as iron of such and such a quality will always bear a strain of a commensurate intensity. The Government authorities test the quality of the metal in the chain cables submitted to them for ascertaining the proof-strength by cutting out a link here and there from any part of the cable and breaking it. The character of the fracture, combined with the results of the other experiments, are sufficient and accurate indications of the quality of the iron, and the skill and care displayed in its manufacture and conversion into links. It cannot be too carefully borne in mind that the strength of a piece of iron is not an unequivocal test of its quality. A bar of iron that is not by any means homogeneous throughout its whole length may yet be able to resist the testing strain put upon it, simply because the strain may not affect its weakest part. It is uniformity of strength and of resistance that is wanted in all ironwork, more especially in such an example as a chain, in which the slightest weakness in one of the component parts will cause the failure of the whole. A single faulty link will cause the cable to part, the ship to be wrecked and the crew and passengers to be lost. It is scarcely possible that the proof-strength of a chain cable could be tested link by link, except so far as that the transmission of strain throughout the whole may be regarded as a valid criterion, but by cutting a few links indiscriminately a fair estimate may be unquestionably made of the soundness of the entire length. Should a single link prove defective while undergoing the ordeal, the whole chain is not condemned on that account, but a new link is substituted, and the cable submitted to a further test. As a rule manufacturers rarely send chain cables for testing that are below the standard, for the best of reasons: in the first place, it would be to no purpose, and in the second they would damage their own reputation for good work.

FLOATING DOCKS AT CARTAGENA AND AT FERROL.*

By Mr. GEORGE BANKS RENNIE, M. Inst. C.E.

AFTER touching upon the various modes formerly adopted of cleaning and repairing the bottoms of ships, the author referred more particularly to the wooden floating docks introduced by Mr. Gilbert in the United States of America, and to that made by him, in 1858, at Venice, for the Austrian Naval Arsenal of Pola, in which the two largest ships that had been docked were the *Kaiser*, of 3,225 tons, and the *Ferdinand Max*, iron-clad, of 3,066 tons. The Messrs. Rennie having been called upon by the Spanish Government to make a proposition for furnishing a floating dock for Cartagena, capable of raising the class of iron-clad ships then about to be added to the Spanish navy, having a weight of from 5,000 to 6,000 tons, which represented the *Numancia* and the *Vittoria* types, they proposed a dock somewhat similar to that constructed at Venice, but of iron instead of wood, with certain important modifications. In the wooden structure, in order to sink the dock sufficiently, it was not only necessary to allow water to run into the lower chambers, but water had to be forced into the top compartments at the sides, to overcome the buoyancy of the material; while in the iron structure provision had to be made to prevent the dock sinking when the lower chambers were filled with water. To accomplish this, the upper part of the side walls was divided into compartments, forming permanent air chambers or floats, of a capacity sufficient to maintain the decks of the side walls from 6ft. to 8ft. above the water level. The author laid stress on the importance of these for the safety of iron floating docks. As an instance of the success of the Cartagena dock, he mentioned that the *Nu-*

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* Read before the Institution of Civil Engineers, January 10.

mancia, of 5,600 tons weight, had been supported on it for a period of eighty days. A list was then given of wood and iron floating docks which had come under the author's notice, all of which were of rectangular shaped sections, with the exception of the *Bermuda*, which was of a U section. This latter form required gates or caissons to close in the ends, which were not necessary in the rectangular section on account on the bottom and the keel of the ship being entirely raised out of the water. Less water had also to be discharged with the rectangular form, and the amount of pumping varied as the weight of the ship, whilst in the other, or U form, the smaller the ship the larger the volume of water to be discharged. The depth of the basement, or lifting chamber, of a floating dock like that at Cartagena mainly depended on the lifting power required. The thickness of the plates of the shell was $\frac{5}{8}$in. and $1\frac{1}{4}$in. in the centre part. For such a vessel as the *Numancia*, weighing 5,600 tons, the strain was estimated to be 1·32 ton per square inch, and for a vessel weighing 20 tons per lineal foot 1·5 ton per square inch.

Of the different plans of conveying docks to their destination, it was remarked that—that of Pola was built at and towed from Venice, that of Havannah from New Orleans, that of Alexandria from France, and the *Bermuda* from the Thames; while those of Cartagena, Ferrol, &c., were sent out in pieces and erected at the respective ports.

The necessary repairs, painting, or cleaning, might be performed by careening, beaching where there was sufficient rise and fall of tide, raising the submerged part out of water by pontoons, or by floating the dock into a shallow basin; this latter plan being the one adopted at Cartagena.

The dock at Cartagena was 324ft. in length, 105ft. in breadth, and 48ft. in height outside; these dimensions of the dock at Ferrol were 350ft., 105ft., and 50ft. respectively. After giving a detailed account of the number of chambers into which the docks were divided, and the scantlings of the materials employed in their construction, the pumping machinery was described, and it was stated that it had been designed so as to be as much concentrated as possible, and thus be capable of being placed under the control of one man. The arrangement adopted was that of a pair of horizontal engines, working two pairs of lift pumps, to draw water from a common pipe, communicating with all the chambers. On the ends of these pipes were fixed the inlet sluices for filling the chambers, and on the sides smaller sluices and pipes in communication with each chamber, so that by opening all the sluices the chambers were filled, and on shutting the inlet sluices one or any number of chambers might be discharged. Thus the whole engine power might be employed in pumping out any one compartment, if it was found desirable to do so, in order to balance or level the deck. A detailed description of the engines, pumps, and sluices was then given.

The shallow basin, or dock receiver, with its three lines of ways, or slips, occupied the site of some old timber ponds. The basin was of a uniform depth of 16ft. 6in. from the top of the quay wall, and the depth of water was 12ft. 3in. The entrance was 126ft. wide. The basin was 382ft. long on the north side, and 345ft. on the south side. The end was curved, the chord of which was 200ft. From this end ran three lines of horizontal ways, or slips, radiating to a centre. Each was 725ft. long and 45ft. broad, and each was laid with four lines of timber ways, intended to receive vessels after they had been raised by the floating dock. It was estimated that six vessels might be building or be under repair at the same time, besides one on the floating dock. The foundations and masonry work were then described, and it was mentioned that the caisson for closing the entrance of the basin was similar to that made by the Messrs. Rennie for Pola.

After the basin and dock were completed water was let into the receiving basin, when the draught of water of the dock was found to be 4ft. 7in., giving a displacement of 4,400 tons as the weight of the dock complete. The dock was afterwards taken into the arsenal basin, and lifted vessels of various sizes—the iron-clad *Numancia* being the largest. The draught of water of the dock with the *Numancia* was found to be 11ft. 3in., the dimensions of the ship being—length between the perpendiculars, 316ft.; extreme beam, 57ft.; and displacement at the load draught, 7,420 tons.

The operation in docking this and other vessels had proved the dock to be in every way efficient, and from the arrangement of the distributing valves it could be managed with facility either in sinking or in lifting.

The *personnel* of the dock consisted of one chief-engineer, one master boiler-maker, and with other assistants amounted to eighteen men in all, and with this staff everything went on regularly and without trouble.

THE MADRAS IRRIGATION WORKS.

THE anicut across the Pennair near Cuddapah in the Madras Presidency is part of the last division of the Madras Irrigation and Canal Company's Works extending from Kurnooh to Cuddapah new nearly completed, and is close to the north-west line of railway. Since the works on this canal were resumed in 1868, the following work has been executed by the company's engineers on the 190 miles of canal:—Earthwork, including revetment and shingle, 7,237,900 cubic yards; masonry, including a large amount of cut stone in locks and sluices, 271,000 cubic yards. The work on the above anicut was commenced as soon as the designs received Government sanction, and the first well was sunk in February, 1869. This important work is half a mile in length, of which two-thirds are upon sand and one-third on rock foundation. The design where on rock is a simple wall; where on sand a sloping surface of masonry floored with cut stone, and resting upon four rows of brick wells filled with concrete, the toe of this masonry slope being protected by a dry rubble apron 105ft. in width. This work will be completed within four months, or two years from its commencement, the latter, however, only consisting of twelve working months.

Including the head works and locks, there are (according to *Engineering*) 38,000 cubic yards of masonry, including 1,150 brick wells, and 8,500 cubic yards of cut stone flooring, and 27,000 cubic yards of large boulders protect the foot of the work; these have been hauled three miles by bullock power.

During the last working season, from January to June, 1870, 22,000 cubic yards of masonry were built, which include 4,000 cubic yards of cut stone flooring and nearly all the cut stone required in the head works. There were also deposited in the rubble apron 14,000 cubic yards of large quartzite boulders. This rate of progress will compare with any work of the kind in India, as will also the cost and the quality of the work. The work has been carried out by the company's engineer, Mr. Higginson, C.E., and his assistants, with such labour as the district could provide. The extensive works of the railway company and the high rates that they pay, rendered it for some time difficult to obtain the bodies of men necessary; this was, however, overcome by having men trained on the completed portions of the company's works near Kurnooh.

BOOKS RECEIVED.

Church Design for Congregations: Its developments and possibilities. By James Cubitt, architect. (London: Smith, Elder & Co.) This very useful book was a short time back published in the BUILDING NEWS. The satisfaction expressed at its appearance in our pages by many readers augured well for its success in a separate form. The suggestions then offered to professional readers Mr. Cubitt now submits to the consideration of the general public, convinced that it is only with the intelligent concurrence of the outside world that architecture can in these times make any great movement. For the benefit of new readers who may not remember the work we will summarize its contents. Mr. Cubitt's "points" are, that more character and fitness are needed in our churches, and that neither of these are to be gained without discovering what the weak points of ordinary church-design really are. Having indicated numerous examples where either good architecture is sacrificed to convenience, or convenience to the orthodox church type of nave and aisles, the author directs attention to the improvements he would introduce. These are, briefly: plans with few columns, the adoption of wider naves and narrower aisles, the more frequent use of the dome; plans based on the circle, the octagon, and truncated ellipse: and improved gallery construction. If his arguments are not throughout well maintained it is not from the want of careful research and examination of ancient examples—the latter well thought out and adapted to meet the requirements of modern wants. If English architecture is indeed again to become what its name signifies it must do so by conforming, not to nineteenth century art-notions, but to its real wants, meeting them in the old art-spirit, and the more earnest workers in its cause like Mr. Cubitt the better.

Principles of Mechanism, by Robert Willis, M.A., F.R.S. (London: Longmans), is a thorough synopsis of the laws applying to combinations of machinery considered as governing the relations of motion. It is sure to become at once a standard work of its kind.

Handbook for Essex, Suffolk, Norfolk, and Cambridgeshire (John Murray).—Possibly continental complications have diverted the attention of some of Mr. Murray's "guides" to our own island; if so architectural and other tourists will set off against many disadvantages the opportune publication of this handbook. Embracing four counties, peculiarly rich in archæological associations, it deals well with its subject, and is almost as valuable as a reference for the architectural student as a handbook.

The British Almanac for 1871 needs only mention to secure its usual reception.

Irregularities and Diseases of the Teeth, by Henry Sewell (J. Churchill & Sons), is a reissue of papers on dental surgery, previously published in the *Lancet* and *British Journal of Science.*

The Young Mechanic, a Book for Boys, by the author of "The Lathe and its Uses," &c. (London: Trübner & Co). This book cannot fail to be useful to boys of a mechanical turn. By the author of "The Lathe and its Uses," and "The Amateur Mechanic's Workshop" (both of which works originally appeared in the *English Mechanic and World of Science*, and were, we believe, very favourably received by many thousand readers of that journal), it is sure to be practical and therefore reliable. It is well illustrated and smartly bound.

Building Intelligence.

CHURCHES AND CHAPELS.

ALGIERS.—On the Feast of the Circumcision, the Bishop of Gibraltar consecrated the new church of the Holy Trinity, Algiers. The cost of the building is about £4,000. The style of architecture is Byzantine, with apsed chancel, western rose window, and gable belfry. The interior fittings are of oak, with open oak benches. The chancel and western windows are already provided with stained glass, and those of the nave will be contributed ere long.

EXETER CATHEDRAL.—The *Exeter Gazette* states that the monetary difficulty with respect to the commencement of the restoration of the cathedral of that city is at an end. The sum of £3,000 was wanted to make up the £15,000 required for the choir alone, and in consequence of that deficiency the chapter decided two or three weeks since to postpone the undertaking. Since then the Rev. Chancellor Harington has announced his intention of adding £3,000 to his previous gift of £1,000, in order that the restoration may be at once proceeded with, in accordance with Mr. Gilbert Scott's plan. A meeting of the chapter will be held shortly, and it is thought probable that the contract for the alteration and re-adornment of the choir will be signed forthwith. What the cost of the restoration of the whole cathedral will be has not transpired, but it is sure to exceed £50,000.

GREAT DODDINGTON.—The parish church of Great Doddington, Northampton, was reopened on S. John the Evangelist's Day, after restoration. The vicar, the Rev. M. W. Gregory, has acted as architect. The building was originally a large Norman church, with a large chancel full of small Norman windows with very deep splays. Some of these were wholly blocked up and lost until Mr. Gregory cleared away the accumulated whitewash and other obstructions; others were converted into decorated windows. Rows of what look like putlog holes occur both in the lower and upper stages of the walls. But on examination they are seen to go completely through the wall, and to be finished masonry throughout. Against the chancel arch on the south-west side is a wall-painting representing the Crucifixion, of good character, which Mr. Gregory has carefully preserved. The design for the roof of the chancel was supplied by Messrs. Law & Sons, of Northamptou, but the design has not been carried out in its entirety. The whole of the work has been executed by Mr. Goodridge, builder, of Roade, under the supervision of the vicar. The cost of the chancel restoration has been about £400. The cost of the restoration of the nave is about £600.

Kidmore.—The internal decorations of the chancel of Kidmore Church, near Henley, have just received some most important additions. A new pavement has been laid down in the sacrarium, by Messrs. Minton, Taylor, & Co., of Stoke-upon-Trent, with an *Agnus Dei* introduced as a centre. The step in front of the altar is of Devonshire marble, as are also the columns in the arcade of the reredos. Trefoils of marble have also been inserted in the spandrels, with excellent effect. The architect was Mr. Arthur Billing, of Tooley-street, Southwark, and the builders, Messrs. Wheeler, Bros., of Reading.

Leake.—The chancel of the parish church of Leake is to be restored by Mr. Edward Browning, of Stamford, Messrs. Halliday & Cave, of Greetham being the builders. The works proposed consist of taking down and rebuilding the east wall and inserting a four-light geometric window; new tracery to side windows; an entirely new open-timbered roof, covered with lead, of the original pitch, as defined by the string-course on nave gable; perforated stone parapets at sides and gable end; a geometric and encaustic tile floor; new steps and seats; windows reglazed with cathedral glass; and thorough restoration of the whole of the walls and dressings. The amount of the contract is £1,250.

Torquay. — The parishioners of S. Mary Church, Torquay, have resolved (says a local paper) to remove the old church tower, and build a new one more in keeping with the church, which has been rebuilt lately. The tower is to be a memorial of the late Bishop. The subscriptions amount to £1,300, but £400 only is required to carry the tower as high as the ridge of the nave. We hope that this statement is not the precursor of a piece of Vandalism.

BUILDINGS.

Basford.—Some time ago it was resolved by the Basford Board of Guardians to erect a plain but substantial hospital, with all the most important modern comforts. The building, which was designed by Mr. Barber, architect, of Eastwood, is a plain edifice, two stories in height. It consists of brick with stone dressings, and is fitted up with everything which could possibly be suggested to conduce to the health of the patients. The building is now finished, with the exception of the fixing of the beds, and will be used for its purpose in a week or two. It will accommodate 131 beds at the least. The north end is devoted to males only, and consists of two bedrooms on each story, with day rooms adjoining capable of accommodating the number of persons required by the Poor Law Board. Communication between the hospital and the workhouse proper is obtained by a long passage or corridor. The main entrance opens to the centre of the building. The rooms on the ground floor of the centre are used for store-rooms, surgeons' and nurses' convenience. The upper story will be used solely for a lying-in ward, and will accommodate eight persons. The whole of the rooms are very lofty and well-ventilated. The outer walls are exceedingly thick, and have a space of 3in. between the inner and outer bricks. Besides the main building, which is to be used for general invalids, there are separate buildings for reception and fever wards and for other infectious diseases, all of which are provided with necessary comforts. Mr. Hopewell, of Basford, is the builder, Mr. Burton, of Basford, the painter, and Mr. Flewitt, of Nottingham, the plumber and gasfitter.

Birkenhead.—Schools in connection with the Hamilton English Presbyterian Church in Laird-street, Birkenhead, have just been completed; the accommodation of the whole, including two class rooms, is for 300 children, and the cost, exclusive of land, has been made under £750. There are two good playgrounds, and all conveniences attached; the architect is Mr. James N. Crofts, of Liverpool, and the contractor Mr. D. Readdie, of that town.

Stamford Hill.—Mr. Samuel Morley, M.P., laid the memorial-stone of the new Congregational Church at Stamford Hill on Saturday week. The building was described and illustrated in the volume of the Building News just concluded.

Uxbridge Union.—Extensive alterations and additions have been in progress at the above during the last few months, from the designs and under the superintendence of Mr. Charles J. Shoppee, of London, architect. The accommodation hitherto provided having been for some time past felt to be insufficient, the Guardians decided on erecting a new infirmary for males, in addition to altering the old infirmary (which formerly served for both sexes) for females. Mr. G. E. Kearley was the contractor for this portion of the works, together with the new boundary walls. A new ward for able-bodied men has also been erected, for which Mr. T. Taylor, of Uxbridge, was the contractor. Careful attention has been given to ventilation throughout the new buildings. Messrs. May were the contractors for the stoves and heating apparatus. Moule's earth-closet system has been adopted throughout. Mr. Collett was clerk of the works.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR. 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—H. M. C., C. B. A., W. B., R. E. B., J. N., J. B., S. & Co., P. & Son, S. & Son., Rev. E. K., W. A. P., J. H. T., T. B., Borough of Leicester, T. B. Hyam, S. Fisher, T. Burridge, J. C. J., W. B.

Hy. Walker.—The design will appear.

H. M. C.—The MS. returned by post.

C. S. S, J.—Sketch returned.

A Young Architect.—Any elementary book on architecture, or state what you want in "Intercommunication" column.

Thos. Cole.—You can procure all the Building News sketches, or in the course of a few weeks you may purchase them in a volume.

Holley & Miller.—The engraving came to hand.

G. N. Thomas.—A good sketch, but too late. The sketch returned.

E. Winter.—Sketches returned—good, but too late.

INDEX TO VOL. XIX.—The index to the Nineteenth Volume of the Building News will be published with next week's number.

Correspondence.

CONCRETE BRICKS.

(*To the Editor of the* Building News.)

Sir,—Referring to the interesting paper of Mr. Gilbert R. Redgrave, read at the Architectural Association and partly reported in your last number, I may mention the manner in which a builder, who erected a good class of small houses for his own investment, prepared his concrete. He made thin mortar of grey lime, and laid it to the thickness of about 2in. in the bottom of his trench, then spread sufficient clean gravel ballast, to allow the ballast to appear about 1in. above the mortar, and would continue with alternate layers of mortar and ballast. Many years after his death, I had occasion to pull down and alter a portion of one of his houses, and found the concrete to be completely solid and hard, in fact an artificial rock. As to the bricks which Mr. Redgrave calls "patent," can he tell us why all such are made so large that they will not bond in with ordinary stocks? I am convinced that their large size prevents their use for many purposes. I am using for some facing work a "patent" white glazed brick 9in. by 4½in. by 3 1-16in., and am compelled to build all the backing up slowly in cement. On another occasion I wished to use for internal facing the Burham Company's Gault clay bricks, but was reluctantly forced to alter my specification when I measured the samples and found them to be so thick as to spoil the bond of the other work. The same defect has caused me to reject a beautiful brick with an impressed pattern on its face. All the moulded, beaded, chamfered, and other bricks are so largely in excess of the thickness of an ordinary stock or malm facing brick, that I am sure they will never become popular until their size is so reduced that they can be readily worked.—I am, &c,

H. A. B.

ARCHITECTS AND SHARP BUILDERS' CLERKS.

Sir,—The remarks of your correspondent "Reader," which I have only just seen, are in one way very suggestive. They do not appear to need much special reply, as the writer in no way challenges my facts or propositions, but confines himself to a not over-refined ventilation of much accumulated spite against the higher ranks of the profession in general. His great point, however, seems to be that the public sanctions the practising of incompetent men by employing them freely.

Now this is exactly one of the great evils which I should like to see remedied. No one doubts that the public does and will employ incompetent men, because as a rule it finds them more accommodating as to matters both of taste and of finances. In the same way there can be no doubt that the public, the middle-class public of the towns more especially, would, if it could, allow its legal affairs to be misconducted by unauthorised attorneys who might offer a reduction of the orthodox six-and-eightpence; and would hail with delight any medical man who would undertake to poison its families at half the professional rates.

These learned professions have long since found it necessary to protect the public and themselves by legal restrictions, and some system of examinations; and it is hard to see why architects should not obtain some similar organisation. It would, I am confident, be an enormous benefit both to the public, the profession, and even to my friends the builders' clerks themselves, who, if so prompted by ambition, might with the help of careful study make a legitimate start in a profession which they are now obliged to enter, as it were, by the back door.

If only some man of good standing and energy could be found to take this matter up, I am sure it might soon be carried out, and that all parties concerned would soon be congratulating themselves on the result.—I am &c, J. B. F.

Intercommunication.

QUESTIONS.

[2087] ASPHALTE IN CHEAPSIDE.—What description of asphalte is Cheapside paved with—is it Seyssel and is there any hard material incorporated with it?—Z.

[2088] PETERSBURG DEALS.—What is the reason that no real Petersburg deals can be obtained now? Much of the material supplied under that name by timber merchants is little better in appearance than white deal, and when stained looks abominable. It is high time this imposition was exposed.—Z.

[2089] QUANTITIES.—I would feel obliged to any of your readers for expressions of opinion on the vexed question of quantities, especially on the following points, viz:—1. Is it a custom with many architects or surveyors to make a charge to each competing contractor on receiving a copy of the bill of quantities; and if so, how much? 2. In the case of making a charge for each copy, should not the *balance only* of the 1½ per cent. commission be charged to the proprietor in the estimate? 3. Most of the architects of my acquaintance give copies of bills of quantities *free of charge*. But is not this rather unfair? Each of the competing contractors gets his value in the shape of a bill of quantities, and the chance of success in the competition for the contract; why should each competitor not pay at least a small amount on account of the percentage for taking out quantities? Any account of the practice or custom of architects, especially in the provinces, in this matter will be thankfully received.—Justitia.

[2090] TIN-LINED PIPES.—Is it a fact, as stated in your last number, p. 21, in a cutting from an American paper, that tin is more readily attacked and dissolved by water than lead? Or does some peculiarity in the chemical composition of the water of Boston give rise to the statement?—F. O. H.

[2091] CHURCH SITTINGS.—Will some reader kindly inform me what amount of room is usually allowed for the sitting of each person in a church?—T. W. C.

[2092] BOND IN BRICKWORK.—Will any subscriber kindly inform me by means of two small diagrams how old English bond is worked at the angles in 18in. walls?—Student.

[2093] STRIKING PORTIONS OF LARGE CIRCLES. Would any reader of "Intercommunication" kindly inform me of an expeditious way of striking a portion of a circle of any magnitude? I wish to describe a curve 1f. in length, the said curve being a portion of a circle of one mile radius.—T. K.

[2094] MEASURING STRING-BOARDS TO STAIRS. Can any contributor to this column kindly tell me which is the best way to measure string-boards to stairs?—A Joiner's Apprentice.

[2095] PREVENTING SOUND TRAVELLING FROM FLOOR TO FLOOR.—How can I best prevent the passage of sound from one floor to another otherwise than by using sawdust (which often rots the timber)? An answer would oblige—G. E. W.

[2096] CASTING LEAD PUMP BARRELS.—Will some practical plumber inform me how lead pump barrels are cast or moulded, and the square cistern heads and spouts, *i.e.*, what is the core of the barrel composed of? If, as it seems to me, it is a solid iron core the lead will shrink on cooling, and it must consequently require considerable force to draw the core from the barrel.—A Three Branch Hand.

STAINED GLASS.

Melton Mowbray.—A stained glass window will shortly be placed in Melton Mowbray Church, by Mrs. Frewen, of Brickwall, Essex, in memory of her late husband. The window will be made by Mr. Wailes, of Newcastle-on-Tyne. The subject will be "Moses Lifting up the Serpent in the Wilderness."

STATUES, MEMORIALS, ETC.

Bishop's Lydeard.—The committee and members of the Somersetshire Archæological Society are about to erect a monumental brass in the chancel of Bishop's Lydeard Church to the memory of the late Rev. Francis Warre, vicar of that parish, and for many years secretary of the society.

Our Office Table.

Lectures on Architecture at the Royal Academy.—In consequence of the illness of Mr. G. G. Scott, R.A., the usual course of lectures on architecture at the Royal Academy, as announced, will not be given this session. In place of such series, Mr. E. M. Barry, R.A., will deliver two lectures on the subject; Dr. Meryon, one lecture on Beauty, and Professor Tyndall one lecture, the subject of which is not yet announced. It is also reported that Mr. Street, A.R.A., is engaged to give a lecture or lectures.

Royal Institute of British Architects.—At the next meeting, which will take place on Monday evening, the 16th inst., a paper will be read "On the New Buildings for the St. Thomas's Hospital," by Mr. Henry Currey, the architect of the buildings.

The Frost in Bath.—During the frost, the good people of Bath, that city of crescents, were (says the *Globe*) subjected to an unusual annoyance. Although they live above an inexhaustible reservoir of boiling water, they could get no supply of cold, for the company's pipes were frozen. This happened everywhere; but luckless Bath had its gas frozen also. The theory is that the salts, which give the Bath water its salutary qualities, as indicated by the epigram on the monument in Bath Abbey—

> Here storied urn and animated bust
> Show how Bath waters serve to lay the dust—

got somehow or other crystallised in the gas pipes during the intense frost. Whatever the cause, there is no doubt as the effect. Bath, which when lighted up at night is one of the most beautiful cities in Europe, rising terrace above terrace and crescent above crescent, has been in a state of Cimmerian darkness.

Another Landslip.—A landslip occurred at Mevagissey, on Tuesday week, when a mass of rock, estimated at from 500 to 700 tons in weight, forming a portion of the road to the look-out station, fell to a depth of 50ft. into the ship-building yard of Mr. W. D. Lelean. Fortunately all the workmen were away at breakfast at the time of the occurrence.

Death of Mr. Alex. Munro.—This well-known Scotch artist died at Cannes on New-Year's Day. Mr. Munro, a native of Inverness, was about forty-five years of age. His genius was early noticed by local friends, by whom he was introduced to the late Duchess of Sutherland, and through her recommendation he obtained employment for a short time from Sir C. Barry in carving some of the works on Westminster Palace. He soon became famous for groups of children and medallion portraits. One of the best known of his productions was the group from Dante of Paulo and Francesca, which was exhibited in 1851, and afterwards put in marble for Mr. Gladstone. His statue of Watt at Birmingham is a very fine work; also his bust of Sir W. Armstrong, his statue in Westminster Palace of Queen Mary, &c. Several years ago, Mr. Munro fell into very bad health, and found it necessary to live chiefly in the climate of Cannes, where he built himself a handsome house and studio. Whilst there, he executed busts of the Marquis of Dalhousie, the Grand-Duchess Constantine, and other visitors. His latest work was modelling a bust of his father-in-law, Mr. Carruthers of the *Inverness Courier*, intended as part of a semi-public testimonial about to be presented by some of that journalist's friends.

The New Law Courts.—A deputation of London builders, consisting of Messrs. H. Lee, Plucknett, Hannen, Johnson, Trollope, and T. Lucas, have waited by appointment on Mr. Ayrton, at the Office of Works, in reference to the proposed conditions of contract, which had been objected to. These were generally modified, but on the principal supposed points of difference it appeared that the Commissioner and the builders were already quite agreed in substance, and the only question was whether the wording of the conditions carried out the intentions of the Commissioner and the builders. The legal adviser of the builders and the legal adviser of the Commissioner appeared not to coincide on the legal phraseology necessary, and it was left to these gentlemen to confer further together. The deputation expressed their thanks to the Commissioner for his patience and courtesy, and withdrew. The points of difference being reduced almost to a question of words, it may reasonably be presumed that no long time will elapse before the tenders are opened and the works so long delayed are at length allowed to proceed.

Railway Passengers.—There are sixteen railways in Great Britain each of which carried more than 5,000,000 of passengers in the year 1869. The Manchester, Sheffield, and Lincolnshire line carried 6,991,371; the North British, 8,507,171; the Great Northern, 8,733,764; the Caledonian, 9,226,684; the North-Eastern, 11,944,315; the Great Eastern, 13,008,907; the South-Western, 13,140,453; the Chatham, 13,963,882; the Midland, 15,567,454; the Brighton, 16,560,431; the South Eastern, 19,157,205; the North London, 20,620,750; the Lancashire and Yorkshire, 22,643,002; the Great Western, 23,103,406; the London and North-Western, 28,758,886; and the Metropolitan (including the "District," St. John's Wood, and half the Hammersmith), no less than 36,893,791. These numbers are below the actual ones, as they do not include the owners of season or periodical tickets; the number of journeys taken by these persons is not known, but it has been estimated at about 350 each. The Great Eastern had in the year 1869 4,899 holders of such tickets; the Great Northern, 8,261; the Great Western, 4,300; the Lancashire and Yorkshire, 8,487; the London and North-Western, 11,299; the South-Western, 8,651; the Chatham, 8,568; the Sheffield, 1,814; the North-Eastern, 4,928; the Caledonian, 6,671; the North British, 6,918.

Associated Arts' Institute.—At the first meeting of this society since the Christmas recess, held on Saturday evening last, Mr. J. Hungerford Pollen, M.A., of the Kensington Museum, read an able paper on "Architectural Details applied to other uses," the first portion of which will be published in the Building News for next week. After the reading of the paper a discussion took place on the condition and prospects of the Institute, and whether these were susceptible of improvement by a removal to other quarters (University College was suggested), and changing the night of meeting from Saturday to some other more generally convenient evening. Eventually a committee was appointed to act in conjunction with the committee of the Institute in the consideration of these points, and in determining what further (if any) steps should be taken to increase the popularity and usefulness of the Institute.

Whitechapel Dwelling-Houses.—The *Food Journal* is glad to perceive that Mr. Liddle, the medical officer of the Whitechapel Union, still continues his crusade against the nefarious dens that do duty for dwellings in that locality, and we cannot help feeling it a reproach to our authorities that it should be left so much to one energetic man to point out and make head against so monstrous an evil. In common with other medical officers of our populous towns, Mr. Liddle deprecates the system of tinkering that prevails, and is of opinion that nothing but the wholesale pulling down of these miserable blocks of buildings will be of the slightest use. Our Sanitary Acts are terribly defective, and although we have been promised over and over again that the whole subject should be thoroughly dealt with, nothing has yet been done that goes to the root of the evil. How long will our rulers shut their eyes to the irremediable mischief that, like leaven, daily increases amongst us, and will ere long burst its boundaries, and overflow all ranks of civilised society? A heavy retribution will some day be exacted of us, and we shall well deserve it; for in defiance of warning voices like those of Mr. Liddle, and Dr. Trench, of Liverpool, we are still utterly careless on some of the most important questions of the day—viz., the national health and morality.

The Institution of Civil Engineers.—At the meeting of this society on Tuesday, the 10th inst., Mr. Cubitt, Vice-President, in the chair, five candidates were balloted for and declared to be duly elected, including two Members, viz.: Mr. James Edward Day, Melbourne, Australia; and Mr. Francis Jones, Ex. Eng. for Irrigation, Guzerat. Three gentlemen were elected Associates, viz.: Lieut.-Col. George Chesney, R.E., President of the (new) Indian Civil Engineering College; Mr. John William Inglis, Ex. Eng., P.W.D., British Burmah; and Mr. Charles Marshall Poole, Notting-hill. It was also announced that the Council had recently admitted the following candidates as Students of the Institution, viz.: Messrs. Henry Charles Baggallay, Crawford Peter Barlow, Fredk. Stuart Courtney, Thomas Duerdin, Charles Elwin, George Charles Gilmore, Arthur Charles Gotto, Richard Hamilton, William Horn, Joseph Tintorer, and Frederick Thomas Young. At the close of 1870 the numbers of the several classes belonging to the Institution were: 16 Honorary Members, 709 Members, 1,010 Associates, and 201 Students, together 1,936, as against 1,802 at the same date last year, showing an increase at the rate of 7½ per cent. in the twelve months.

London Association of Foremen Engineers.—At the eighteenth annual meeting of the London Association of Foremen Engineers, held at the City Terminus, Mr. J. Newton, of H. M.'s Mint, was unanimously, and for the thirteenth time, re-elected President of the Institution. The balance-sheet for the past half-year was of a most favourable character, and exhibited a sensible increase in each department. The society now possesses nearly £1,700 of funded money, and has 187 members on its books.

The Antiquities of Iona.—Mr. James Drummond, in a paper read by him to the Society of Antiquaries of Scotland, having referred to the state of the antiquities of Iona, has been replied to by the Duke of Argyll, who has for many years watched their condition and prevented important walls from falling. Parts of the Cathedral and S. Oran's Chapel have been strengthened, tombstones in the Reilaig Oran have been surrounded by an iron railing, and a number of the finest have been placed for safety inside S. Oran's Chapel and the ruins of the Nunnery, so that these fine specimens of Celtic art are well preserved, the people of Iona having long been in the habit of appropriating the old tombstones to cover their dead.

Citurnum.—Mr. Clayton recently read before the Society of Antiquaries of Newcastle some "Notes of a Recent Excavation on the Roman Station of Citurnum," in connection with which has been discovered a building with a frontage of 86ft., with three openings, and in the rear a range of five apartments, in one of which are the underground arched vault and steps discovered in the last century. Mr. Clayton considers the masonry just excavated to have been originally part of a forum.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.*—"On the Proposal for making the Owners of Lands and Houses pay a Proportion of the Local Taxation." By Mr. Edmund Rushworth. 8 p.m.

Tuesday.—*Institution of Civil Engineers.*—"On the Strength of Lock Gates." By Mr. W. R. Browne, Assoc. Inst. C.E. 8 p.m.

Wednesday.—*Society of Arts.*—"How Meat is Preserved." By Richard Jones, Esq. (Professor Huxley in the chair). 8 p.m.

Friday.—*Civil and Mechanical Engineers' Society.*—"Ought the Government to Appropriate the Railways?" By Mr. B. Haughton. 7.30 p.m.

Saturday.—*Associated Arts' Institute.*—Discussion introduced by Mr. H. C. Boyes. Thesis—"That Archæological Accuracy is neither Necessary nor Desirable in Art." 8 p.m.

Chips.

The national school at Whitwood Mero has just been enlarged. The works have been carried out from the design and under the superintendence of Mr. J. L. Parkin, architect, Castleford.

A new school is about to be erected at Capel Sion, near Aberystwyth, at the expense of Col. W. T. R. Powell, from designs prepared by Mr. G. A. Thomas, of Liverpool.

The Ham Hill masons have all been thrown out of work by the cold weather.

The bridge crossing the Tono at North Town, Taunton, is shortly to be widened, at an estimated cost of £350.

The Architectural Galleries in Conduit-street are now in process of re-decoration.

The collection of antiquities of the late Sir James Y. Simpson has been presented to the Society of Antiquaries of Scotland. The collection includes portions of sculptured slabs from Nineveh.

The old church of Charleywood, West Herts, in bad repair, and no longer equal to the wants of the parish, has been taken down, with the exception of the tower, and replaced by a larger edifice, from designs by Mr. G. E. Street, which was formally consecrated by the Bishop of Rochester on the 20th ult.

We understand that Mr. Robert W. Edis, F.S.A., is a candidate for the office of architect and surveyor to the Metropolitan School Board.

The designs and plans for the new promenade pier at Herne Bay are now on view at the Dolphin Hotel. The structure is to be composed entirely of iron, and the design is of a tasteful character. The estimated cost is £18,000.

Timber Trade Review.

Prices, 10th January:—Quebec 1st quality bright pine, 18*l* to 19*l* 10*s* per Petg. std. hund.; do. 2nd quality bright, 13*l* to 13*l* 10*s*; do., 3rd quality bright pine, 9*l* to 9*l* 10*s*.

Quebec floated pine 2nd quality, 12*l* 10*s* to 13*l*; Quebec mixed white spruce, 13*l* per 120 12ft. 3 × 9; 2nd do., 13*l*; St. John's, 12*l*; pitch pine planks, 12*l* to 12*l* 10*s* best Archangel yellow, 11*l* to 13*l* 10*s*; Wybourg yellow, 9*l* to 10*l* 10*s*; Petersburg best whitewood, 9*l*.

Timber, per load of 50 cubic feet.—Norway balks, 30*s* to 35*s*; best Swedish, 52*s* 6*d* to 57*s* 6*d*; do. 2nd quality, 50*s*; yellow pine, 75*s* to 95*s*; red pine, building sizes, 60*s*; do. large square, 90*s*; ash, 70*s* to 85*s*; birch, fresh and large size, 95*s* to 105*s*; do. small, 60*s*; Quebec oak, 6*l* 5*s*; teak, 12*l* 10*s* to 13*l*; greenheart, 6*l* 10*s*; African oak, 5*l* 10*s* to 6*l*.

Petersburg lathwood, 5*l* to 5*l* 10*s* per cubic fathom; crown Memel pipe staves. 170*l* to 180*l* per mille; Bosnian staves, 32*l* 10*s*; Quebec pipe staves, 72*l* 10*s*; do. puncheon staves 21*l*.

Prepared flooring boards, ⅞in. thick, 6*s* 6*d* per square; do. 1in., 10*s* 6*d* per square; do. matched flooring, 6*s* to 8*s* per square.

Christiana spars, 4in. to 6in. in diameter, 1*d* to 1⅛*d* per running foot.

Dantzig deck deals, best quality, 25*s* to 26*s* per 40ft. 3in.; 2nd quality, 15*s* to 16*s* per do.

Honduras mahogany, 4¾*d* to 5½*d* per foot; Mexican, 4¾*d* to 5*d*; Tabasco, 4¾*d* to 5½*d*; Cuba, 7*d* to 10*d*; Domingo, 7*d* to 10*d*; do. curls, 10*d* to 24*d*.

Cuba cedar, 6*d* to 7½*d* per foot; Honduras do., 4½*d* to 5½*d*; pencil cedar, 2*s* to 2*s* 6*d* per foot cube (ordinary quality); Florida do., 3*s* to 4*s* 6*d* per foot cube.

Walnut (Italian), 4½*d* to 5*d*; American large black walnut, 3*s* to 3*s* 6*d* per foot cube; do. inferior, 1*s* 10*d*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Metals.

Lead:—

		£	s	d	£	s	d
Pig Foreign	per ton	£17	12	6	£17	15	0
,, English W.B.	do	19	15	0	0	0	0
,, Lead Co.	do	18	15	0	19	0	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled	do	19	0	0	20	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper:—

		£	s	d	£	s	d
ritish—Cake and Ingot	per ton	£70	0	0	0	0	0
Best Selected	do	71	0	0	0	0	0
Sheet	do	74	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	70	0	0	73	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	0	0	65	0	0
,, Refined ingot	do	69	0	0	72	0	0
Yellow Metal	per lb	0	0	6¾	0	0	7

Iron:—

		£	s	d	£	s	d
Pig in Scotland, cash	per ton	£2	11	6	0	0	0
Welsh Bar, in London	do	7	2	6	7	10	0
,, Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	10	0	9	15	0

Timber.

	£	s	£	s
Teak ....load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	0
Dantzic oak	5	5	6	15
,, fir	2	15	4	0
Memel fir	3	0	4	0
Riga	3	3	3	10
Swedish	2	7	2	14
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	4	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	10	17	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do.	12	15	13	10
Archangel, yellow	11	10	13	10
St. Petersburg, yel.	12	0	13	10

	£	s	£	s
Finland	£7	0	£8	
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per	s.	d.	s.	d.
sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per ton	£37	0	0	0
Sperm body	78	0	0	0
Cod	35	15	36	0
Whale, Sth. Sea, pale	36	0	0	0
Olive, Gallipoli	40	0	0	0
Cocoanut, Cochin, ton	45	0	45	10
Palm, fine	0	0	0	0
Linseed	30	5	0	0
Rapeseed, Eng. pale	43	15	40	0
Cottonseed	28	0	33	0

BUENOS AYRES GOVERNMENT CERTIFICATE.—Translation:—We, the undersigned, at the request of Messrs. Jas. C. Thompson and Co., certify that the Iron Safes of Messrs. Chubb and Son, London, of which these gentlemen are agents, were exposed for several hours to the fire that took place in the offices of the National Government on the evening of the 26th instant; that in our presence they were easily opened with their respective keys; that the moneys and important documents they contained were found in perfect order, and that these safes are now in use in the National Treasury Office.—Buenos Ayres, July 31, 1857.

Signed

J. M. DRAGO, Treasurer of the National Government.
JOSE TOMAS ROJO.
JUAN M. ALVAREZ.

A true copy.—A. M. BELL.

A large assortment of these SAFES may be inspected, and lists of prices obtained at CHUBB and SON'S, 57, St. Paul's-church-yard, London; 68, Cross-street, Manchester; 23, Lord-street, Liverpool; and Horsley-fields, Wolverhampton.

Trade News.

TENDERS.

Hull.—For proposed day schools for Fish-street Congregational Church. Mr. S. Musgrave, architect:—

	£	s
Hockney & Liggins	£1800	0
Brown	1733	0
Musgrave	1730	0
Foster	1724	0
Raven	1708	10
Barrett	1696	0

Hull.—For boys' school in connection with S. Paul's Parish Church. Mr. S. Musgrave, architect:—

	£	s	d
Fewster	£1287	10	0
Raven	1276	11	7
Schofield & Co.	1276	4	0
Sergeant	1265	10	0
Haswell	1235	10	0
Foster	1205	0	0
Barrett	1172	0	0
Hockney & Co.	1170	0	0
Evington & W. Larram	1161	7	6

Kennington.—For erecting a new Workhouse at Kennington, Surrey, for the parish of Lambeth. Messrs. R. Parris & T. W. Aldwinckle, architects. Quantities supplied by Mr. T. Nixon:—

Brass & Son	£52,590
Wilson	49,500
Gammon & Son	48,457
Eaton & Chapman	47,738
Myers & Sons	47,672
Wright, Brothers & Goodchild	47,500
Mann	47,465
Yates	47,356
Latbey Brothers	47,353
Garrud	47,291
Dickinson & Oliver	47,100
Howard	46,740
Cook & Green	46,439
Waterson & Co.	46,420
Crabb & Vaughan	46,300
Markwick & Thurgood	46,000
Wood	46,000
Rider & Son	45,918
Hart	45,700
Lacey	45,500
Manley & Rogers	45,467
Brown	45,300
Nightingale	45,218
Perry & Co.	44 990
Downs	44,980
Hill, Keddell & Waldram	44,600
Crockett	44,390
Hensbaw	42,784
Architects' Estimate	42,350

BATH STONE OF BEST QUALITY.

Randell, Saunders, and Company, Limited. Quarrymen and Stone Merchants, Bath. List of Prices at the Quarries and Depots; also cost for Transit to any part of the United Kingdom, furnished on application.

BATH STONE OFFICE,
[Advt.] Corsham, Wilts.

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Whitchurch, Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. Local Board Office Whitchurch, Salop.

Wharfdale Union, Feb. 9.—For plans, specifications, and estimates for the erection of a new workhouse, to accommodate 150 inmates, exclusive of vagrants, on ground situate at Newhall, near Otley. C. J. Newstead, clerk to the guardians, Board-room, Boroughgate, Otley.

Municipality of Colombo, Jan. 31.—For the preparation and supply of the smith and founder's work required for the new public markets and municipal offices at Colombo, Ceylon. S. Grenier, secretary, M.C., Colombo.

War Department Contract, Feb 4.—For the necessary work and materials required in the performance of work and repairs, and supply of labour or materials separately, as required for the service of the War Department, to the buildings in the Permanent Barracks, camps, or property at Aldershott, and connected with the War Department property at or in the vicinity of Aldershott. Director of Contracts, War Office, Pall Mall.

Herefordshire, Jan. 31.—For the erection of farmhouse at Hegdon Hill, near Bromyard, Herefordshire. Ernest A. Day, architect and surveyor, Foregate-street, Worcester.

War Office Contract for Timber, Feb. 4.—For the supply of dry ash plank, of the very best and toughest quality, thoroughly seasoned. Forms of tender may be obtained from the Director of Contracts, War Office, Pall Mall, London.

Walsoken, Jan. 20.—For the erection of farm buildings, a little below Osborne House; and for the erection of a pair of attached cottages at the Four Gowts, in the parish of Tydd St. Giles. W. Adams, architect and surveyor, Wisbech.

Hereford, Jan. 16.—For taking down and re-erecting two first class shops and dwellings, situate in Widemarsh-street, for Mr. C. Curtis. George Smith, architect, Ross.

London and Blackwall Railway Company, Jan. 24.—For brickwork, ironwork, earthwork, and other descriptions of work required for the construction of a part of the Millwall Extension Railway, about 650 yards long, near to the East Ferry-road and the side of the river Thames opposite to Greenwich Hospital. John F. Kennell, secretary, offices, London Terminus, Fenchurch-street, E.C.

London, Jan. 20.—For alterations, &c., to the Old King John's Head, P.H., Mansfield-street, Haggerstone. Mr. Rogers, as above.

London (St. Luke's Workhouse), Jan. 25.—For the erection of a kitchen and offices at the St. Luke's Workhouse, City-road. James W. Hill, Clerk to the Guardians, Clerk's Offices, Workhouse, Gray's-inn-road.

Poplar, Jan. 26.—For the erection of stabling at Brunswick street, Poplar, for the London General Omnibus Company (Limited). A. G. Church, general manager and secretary.

Peppard Schools, &c., Jan. 21.—For the erection of a school and teachers' residence, at Rotherfield. Peppard, near Henley-on-Thames. Frederick Haslam, architects, Henley-on-Thames.

Greenwich District, Jan. 18.—For laying down tar pavement, Purbeck kerb, and for other works and materials required to make up the roads and footways of Caradoc-street, Braddyll-street, and William-street, Greenwich; and for laying down tooled York paving, Purbeck kerb, and other materials for making up the roads and footways of Florence-cottages, Florence-grove, Florence-street, and Florence-street east, St. Paul's, Deptford. E. W. James, clerk to the board.

Ireland, Jan. 18.—For the construction of a transit shed in the Custom House Docks, for the Dublin Port and Docks Board. Drawings and specification can be seen, and a special form of tender obtained, at the office of the engineer, Bindon B. Stoney, North Wall, Dublin.

BANKRUPTS.

(TO SURRENDER IN LONDON).

Abraham Combes, Tyndale-place, Upper-street, Islington, builder, Jan. 24, at 12.

(TO SURRENDER IN THE COUNTRY).

William Clarkson, jun., Pudsey, stone merchant, Jan. 13, at Bradford.

PUBLIC EXAMINATION.—ACT, 1869.

Jan. 25, J. Stanley, Yarmouth, stonemason.

DIVIDEND MEETING.

Feb. 3, T. Rees, Glaish, Glamorganshire, builder.

SCOTCH SEQUESTRATIONS.

Peter Day, Aberdeen, builder, Jan. 21, at 11.—George Morrison, Bishopbriggs and Glasgow, builder, Jan. 19 at 2.

PARTNERSHIPS DISSOLVED.

G. & G. Sparrow, Nottingham, painters.—Bolt & Co., Newport, Mon., builders.—Baker & New, Bristol, engineers.—Hustzler & Hirst, Frizinghall, near Bradford, joiners.—Day & Co., Wakefield, brick and tile manufacturers.—Rayner & Co., Huddersfield, boiler makers.—R. & R. Swarbrick, Lower Cunliffe, Lancashire, brick and [illegible]e manufacturers.—Whitaker & Gill, Bradford, pain[illegible]—Penston & Norton, Birmingham, builders.—Ste[illegible] & Jackson, Uxbridge, timber and slate merchants.—[illegible] & Candlish, Sheffield, engineers and tool makers.—[illegible] & Goodbarne, Lincoln, builders.—Ash & Clayton, [illegible]l, builders.

Breakfast.—Epps's Cocoa.—Grateful and Comf[illegible]y agreeable character of this preparation has ren[illegible]al favourite. The *Civil Service Gazette* remarks [illegible]gh knowledge of the natural laws which govern th[illegible]s-tion and nutrition, and by a careful applicatio[illegible]es of well-selected cocoa, Mr. Epps has provide[illegible]es with a delicately flavoured beverage which [illegible]vy doctors' bills." Each packet is labelled—J[illegible]co-pathic Chemists, London.

THE BUILDING NEWS.

LONDON, FRIDAY, JANUARY 20, 1871.

ALBERT DÜRER.

WE begin this week our promised series of the works of the great German artist. We wish the weather had been more propitious, as the want of sunlight has unavoidably interfered with the quite successful reproduction of the beautiful and delicate engraving with which we commence our illustrations. This print is said to be one of his earliest copper-plates, and is, we believe, the only one that he entirely copied from the work of other artists. It is the largest of the plates of the life of S. Mary. We feel sure that our readers will be pleased with so important a reproduction of the finest art, the value of which is inestimable. It is our intention, as far as possible, to give such illustrations as will best exhibit the various excellences of the master.

SCHOOLS AND PERIODS OF ART AT KENSINGTON.

WE are tempted back once more to these constantly-enriched and sometimes abused collections—a point on which it may be as well to say no more—by observing how vast is the wealth, in originals, copies, and models, which the public, and especially the artizan classes, neglect, while they throng around Mr. George Cruikshank's "Worship of Bacchus," which is not worth the wall-space on which it hangs, and which is simply calculated to deprave the popular taste, whatever it may do for the popular morals. The architectural and monumental specimens of that art which engaged the genius and divided the love of Giotto, Angiolo, and Raffaelle, producing the Greek temple, the Venetian palace, and the Gothic abbey-architecture, attracts a few students, but scarcely any general admirers, at South Kensington. Those beautiful mouldings, crockets, and corbel-heads might almost as well not be there. What proportion of visitors cares to bestow a sedulous day upon the history written for him between those walls? the gradations in decoration and construction; the decay of styles; the hiding—a sure sign of abasement—of the discharging arch above the Roman doorway with the barbarism of the sculptured architrave; the rise of the Pointed School, and the means of its destruction; the introduction of perishable materials into great building; and the decadence of the French and English forms, from the Cinque-Cento, which faced ponderous Gothic masses with Classic frivolities, and has culminated in the gilt-and-plaster glories of our gin-palaces and Jew clothier's shops. We believe, and are sorry to believe, that the educational influence of the Museum is infinitely small; that it is not cared for; and that amusement is the main object of the thousands who crowd its courts. What ideas do they bring away? Ask them about the naves of Beauvais and Cologne, or the spires of Salisbury and Strasburg, and will they have gained so much as a glimmer from the mind of the architects who reared those shrines of glory? How those wondrous visual effects were caused, when and why the round arch became pointed, and the ponderous solidity of the old Lombard wall became transfigured into airy frettings and frameworks of flying buttress and enchanted windows? Yet all this, and more, might they learn, for each of these subjects has its illustration. Yet it must be confessed that the Museum—apart from its class-room for professed pupils—is not a place where study of any kind has been facilitated by the arrangement of its treasures. At first it displayed an incoherent heap of scatterings from the Exhibition of 1851. Then, purchases were made from the famous and beautiful Bernal Cabinets. Afterwards it was attached to a national Science and Art Department. Next it fell into the hands of architects and amateurs, who would not or could not understand one another, but brought a number of miscellaneous casts for exhibition. To complete the aspect of a bazaar, patents and preserved provisions, toys and magic-lanterns were added. For "education" we had to read "recreation"; so that, speaking in a wide sense, the South Kensington Galleries are of no more intellectual value than—apart from its reading-room—the British Museum. The Vernon, Sheepshanks, and Turner pictures increased its fascinations; indeed, through this institution we have become possessed of foreign art antiquities, chiefly belonging to Italian, Gothic, and Renaissance, which might be envied by Paris itself; yet where are they? Where are the celebrated Soulages specimens? In a jumble. And in what sort of structure are they contained? In an edifice whereof it is hard to say whether it be intended for disfigured Venetian or debased Byzantine, with an interior of iron, brickwork, and tiles, and walls into which are built gates, reredos, chimneypieces, Della Robbia panels, and altarpieces, like mural tablets in a church; a roof supported by metal columns painted in porphyry colour; and modern picture-galleries that have nothing whatever to do with the legitimate purpose of the Museum, which was, so far as the fine arts and art workmanship are concerned, to throw a practical light upon a thousand years of human progress along the paths of civilisation. Having said thus much, to relieve a feeling forced upon every one who examines these collections and notes the impression apparently made by them upon the multitude, we have a more agreeable task in telling ourselves—as the catalogues do not tell us—of the opulence gathered under those vast spaces of glass and iron. Quadro-Cento and Quinque-Cento; gems from the great de Bruges and Soltikoff sales; mediæval *chefs d'œuvres* of the noblest rarity; generous loans of objects, priceless in value, from private proprietors, civic corporations, and the Crown itself; have amassed a collection claiming to be unique, though it is mixed up with an infinitude of rubbish, threatening to become still more repulsive when the dead-menageries of the British Museum are transferred from their natural gloom in Bloomsbury to these airy spaces, and lie—the lumber as they are—across the brilliant track by which fifteen centuries in the history of art are illuminated. Mistakes were often made, especially in the acceptance of loans and the purchases of curiosities. People were glad to be rid of Oriental commonplaces, Japanese armour, and Abyssinian relics, without actually selling them. Gallant officers deposited in the transparent caskets swords of Haran which they would have blushed to wear. Antique art was discovered to be more properly represented in private houses than has been thought; French and Flemish emblazoned MSS. came in by the hundredweight; and families uncounted were ambitious of lending a miniature. Upon the whole, however, the selections were judiciously made; and the really earnest visitor, to whom trouble is of little consequence, may pick his way from gold and silver, iron and brass, metal work of every period, to ivories that tell the entire tale of ivory-carving, from circular diptychs to seventeenth-century German quaintnesses; from Champlevé and Cloisonné, to the superb plaques painted at Limoges in the reigns from the Eleventh to the Thirteenth Louis, to the Persian, Henri Deux, Majolican, and Sèvres potteries, Roman and Venetian glass, and rings and gems, in thousands of which gleamed a spark of historical light. We linger over those sweet Sèvres vignettes, tinted on the *pate tendre*, which gave the village its secret and its renown; the *rose du Barry*, upon which fortunes were once squandered; the delicate Watteau snuffboxes, all delicacy; Palissy's humorous phantasms; even the light-tripping shepherdesses of Dresden. But they show us far more than ought to be seen. Each has its moral and social chronicle, even as have the works, various from age to age, of our English and the Italian gold and silversmiths. Is there no significance in the iron chair presented by the Emperor Rudolf II. to the free City of Augsburg, beyond the incomparable skill of its artificers? none in the circumstances of the time when it was wrought? none in the fact that it is now a mere relic in a foreign museum? That oval ivory basin, too, the tribute of a German Commonwealth to an usurper! Passing on, the faïence of the Umbrian mountain cities, though rarely noticed by visitors, reminds us of a once favourite and, at length, revived industry. We would particularly point out, however, to inquiring manufacturers and artizans, the steel in Ruker's chair, fabricated by a process which has hitherto perplexed the science of our day. This was the workmanship of Mediævalism. Between it and that of the Renaissance lies a deep, dark gulf, but even amid its abysses glimmer signs of an art spirit which never was utterly dead—the barbaric silver-gilt D'Azeglio ewer and basins, embossed as by Gothic hands, some grotesque enamels and specimens of pottery in the Della Robbia style. Parallel with these illustrations, subjects for study not less interesting are found in the copied examples of purely religious art. How far these may be interpreted as history may be shown by reference to a single, yet a most curious series of facts. It is commonly supposed that painters have always represented the Apostle S. Peter as holding the keys. Now in the earlier Pontifical coins even, a key was not visible. The first Pope who employed the effigy was John VIII. After him, the symbol disappeared for more than a century. Turning to pictures, on the same quest, the key is usually exhibited in the hands of the Saviour himself, seated on a rainbow at the doors of Heaven. It was not until the twelfth century that S. Peter was thus invested, but with one key only, holding two in the thirteenth. On the wooden door of S. Maria in Capitolio, Cologne, there is no key; on the mosaics of S. Maria in Trastevere, Rome, no key; on the Chasses des grandes reliqua, at Aix-la-Chapelle, no key. It was not until late in the fourteenth century, or little more than four hundred years ago, that the use of the sacred sign became general. But the act of giving the keys was adopted by artists at an earlier date. It is traceable in manuscripts of the eleventh and twelfth centuries, though the double emblem was introduced considerably later, one half being of gold, the other of silver or iron; and, ultimately the number rose to three. Instances may be adduced placing further back the introduction of these symbols, as in the Lateran mosaics; but in every case so many restorations and alterations have obliterated the original that, for purposes of archæology, these mosaics are, for the most part, worthless. Thus art goes far to prove what is history, and what is not; even when art, without this object, was rising in her triumph and her beauty over the glowing Italian land. So with architecture. The great legends of the world are written in the Egyptian, Greek, Lombard, Moresque, and Northern Pointed style, and in others less pure—called the Roman, early Byzantine, Venetian, Gothic, and Cinque-Cento. From the primeval type, "the Greek hut" supported by wooden posts, to the Athenian temples—luxuries of loveliness; from the prepondering masses of the Egyptian to the aërial and aurora-coloured domes of the Saracen; from the Doric, which was hewn, to the light Ionian, which was chiselled; from the Choragic monument of Lysicrates—exquisitely modelled, yet rarely glanced at in the South Kensington Museum, albeit a work of matchless grace—to the swift descent from the S. Paul's of Christopher Wren to the S. George's and S. James's, of no matter whom in our own, is a long, and in many respects, a lamentable chronicle, reading itself aloud to all who will listen. We are growing better in this respect. As we no longer abandon furniture entirely to the upholsterer, so we have begun to think of climate and national habits, proprieties of form, the juxtaposition of colours, the employment of more various materials, and the application of ornament, even in our dwelling houses. In the treatment of some substances for art purposes, we are making an encouraging advance. As may be seen here, our work does not resemble the lace-like work of the 14th century any more than the rude sculpture of the Carlovingian age; but there are merits belonging to itself. Our wood-carving is far inferior, and depends for effect too frequently upon heavy coats of coarse varnish. This the most cursory comparison will demonstrate. We have, in metal work, nothing equal to the mediæval type, though the Hampton Court gates are admirable. Our enamels are chiefly, in style if not in subjects, copies from ancient schools, as the pastoral staves of Limerick, of William of Wykeham, and Fox, the S. Andrew's mace, and the Aumale cross. The old enamels were often almost lost in a superabundance of chased canopy work; then came the true pictorial enamel, cherished as an art by Ruker, whose name ranks with Cellini's, and is stamped on the sumptuous Julius Cæsar's shield, the Cowper salver, and many another work of immortal fame. As we have before said, much of the decadence is due to the losing of secrets. Thus, the fourteenth-century cup, adorned with transparent Cloisonné panels of coloured glass, exemplifies that which, once a familiar process, is now unknown, and the wavy lines and swelling contours in early glass cannot be more than spectrally imitated by us. Passing on—for these collections are inexhaustible—curious glimpses of long-ago life are caught among the Royal and the Devonshire gems, the cabinets of rings, the early Irish metal work, hieratically rich, and leaving the illuminated manuscripts, some busts are reached which sadly impair our historical ideals and cure us of dreams. The first, unquestionably a portrait, destroys at once the popular notion that Lorenzo de Medici was a personage of noble aspect. His face is ugly, hard, and mean, with the nose awry, giving two profiles, and expresses only shrewdness, cunning, and cruelty. Then there is a jasper jug, which Louis XVI. of France, by causing it to be mounted in the style of his era, claimed for that era, though it was wrought before Charlemagne reigned. This sort of imposition is by no means extinct. The French not long ago, when they had leisure for such tricks, medalled an artist for mimicking Gothic and Renaissance work, and daubing it over with sham ærugo. If for the single fact that it has already drawn serious attention to the question of art-ethics, we should be grateful to the originators of the South Kensington Museum. It must be long, of course, before the public at large appreciate it as more than a sparkling show. They will admire the American milking-machine, and turn their backs on the Libyan Sybil. They will mistake the painted Madonna from Munich either for the Queen, or for Gibson's Venus. We have heard one "well-informed" person instruct his friends that Trajan's column illustrated the siege of Sebastopol! Well, we must expect to pass through these purgatorial stages. The picture is too vast to be compassed by a glance. It takes a long time to read so large a book—and still longer to understand its contents, speaking as they do in languages so various..

The work of restoring the parish church of Chittlehampton has been commenced. The contractor is Mr. J. Cook, builder, of Southmolton.

THEORY OF THE ARTS.

Art Education.

(*Continued from page* 487.)

A METHODICAL order of study, based on the relative importance of the knowledge of facts, as indicated in my last article, is what I propose to consider now, and I will do so in particular reference to the study of the principles and practice of architecture. From what has been said, there is a natural order, corresponding to the process of mental evolution, which must be followed in any course of instruction that promises results proportionate to the labour and mental exertion bestowed; and that it is abject folly to expect architects to be more than unthinking copyists, or engineers to be anything better than mechanical experts in applying formulæ, rules, and approximate tables, until the knowledge or science they apply in their vocations or arts has been acquired by a graduated process of thought, commencing from the simple, general, and useful, and proceeding to the complex and special in a logical order or method.

The ordinary course of study pursued by our practitioners of medicine and other physiologists, beginning with the organic or the study of living bodies, before they have made a sufficient preparatory study of chemistry or inorganic physics, has been commented on by more than one writer of science. A smattering of the dead languages is the only preparation many of our students for scientific professions receive. It is very much the same sort of education, though generally less methodic, our young artists and architects go through. The anterior ideas or phenomena, so to speak, of their art, are quite neglected or made to subserve studies of a more advanced and special character. Elaborate models, drawings, and works of art by the great masters are thrust before them long before they can really appreciate or judge the simplest technic merits of such works. Thus, the figure and the drawing of animal life and coloured studies often precedes any just conceptions of outline or form. It is true, in our modern schools of art, this defect has been in a great measure rectified by a more rational course; but even in these the grades are not always given, so that the mind and eye can feel interested or see the necessary transition from the first to the subsequent step; in short, they are not so arranged as to lead the mind from one kind of conception to another. The connection is wanting. We get, for instance, an abstract idea of a line or form before the eye has understood the tangible or simplest particulars of real objects—the faculty of abstraction or comparison is called into requisition before correct perception of quality. The knowledge derived from observation of simple facts and qualities is incomplete when combinations, and generalizations, and complicated theories are forced upon the attention long before the mind is prepared to receive them. In short, à priori principles are taught before the facts on which they are founded have been understood. In art, as in physics, such a course cannot be productive of progress. In an empirical and early age such a course was indeed followed; but we shall find, on close investigation, the principles were not the abstract laws laid down by a later and maturer age, but the mere embodiments or prescribed rules of a limited experience. Hence, à priori reason was insufficient to advance physical science beyond a certain point: in fact, only the most abstract and general truths were evolved with anything like precision under it.

Architecture is a special and complex art, made up of experimental knowledge of facts, organized knowledge or science, and applied knowledge. It is impossible to obtain a correct idea of architectural design, then, by a knowledge confined merely to studies of ancient buildings and art—the specific results of particular epochs or styles—even though such studies be extended to minute analyses and investigations of the special characteristics of each style or period. The most elaborate researches into such studies, though interesting, are about as useful to the student of progress as studies of ancient treatises on metaphysics or the physiological works of the twelfth and thirteenth centuries. They may interest, but cannot instruct, save, indeed, historically. Much as we admire the examples of Classic or Mediæval art, and point to them as models of contrivance and taste, as compared with the shortcomings of our own, we should far more advance the progress of architectural knowledge and taste by a systematic study of the sciences and arts allied to architecture, and a careful generalization of the elements of the most successful works, for their various uses, of our own day. The studies made during the last century by our material arts—the change in our wants and taste, make it impossible, if not absurd, to look back three hundred years for any information of value, except for ideas of the simplest and most abstract kind, and which should be learnt experimentally, not unthinkingly adopted. I know such a view will be thought dangerous, if not positively heretical, particularly at a time when we are deluged with books of ancient examples and reproductions of the same in bricks and mortar. The time and labour spent in some of these Herculean efforts is regretful to witness, except they be as records of a quickly-dying past.

But the fallacy of the old mode of procedure hardly needs further exposure. From what has been said a classification of the sciences is of the first importance in art education, the sciences being the necessary foundation to applied knowledge. Tabulating them we have two great classes:

1st. Inorganic Science, including the most fundamental, general, and simple phenomena, and embracing abstract mathematics, mechanics, and chemistry.

2nd. Organic Science, including special physiology, zoology, botany, &c.

From mathematical analysis, the first and most perfect of the fundamental sciences, being the most general, simple, and abstract, to the most special of the 2nd class, as physiology, the degree of speciality and complication is increasing. While the first is the most absolute and universal it does not possess the special and direct interest of the latter class of phenomena. It must be observed, also, the dependence of the phenomena of the different sciences in- increases in the above order; and that accordingly we find this to be also the order of their development or progress, as I have indicated before when speaking of the law of mental evolution. The necessary corollary of this is that the relative degrees of perfection or precision of the different sciences are determined. Thus, the ideas involved in mathematical propositions are necessarily the most exact and precise the mind can form, though the reader must not infer from this that the organic sciences are less precise or determinable in their results. The fact is, they being more complex and variable in their phenomena are dependent upon the anterior facts of inorganic science, and require greater time for development. Again, the order, as given, corresponds precisely with the degree of utility and importance of the facts involved; and it is in this respect that such a classification of knowledge is highly necessary in determining the relative values of ideas in the mind, and their relation to the different and various purposes and functions of human art. Hence the architect who has not prepared himself for his special labours by a preliminary study of the laws of matter and force, or the relations of magnitude and quantity, is utterly incompetent to deal with the materials and money at his command, and is wanting in the fundamental condition of his art.

Comte, in his "Philosophy of the Sciences," points out the absolute necessity of the sciences being learned in a natural order, before the Positive method or phase can be reached, not only for this, but as a basis for a rational education and method. He also shows that some sciences are advanced more than others towards the Positive or permanent phase, while others are passing through the middle or transitory stage. Some even are still in the primitive or supernatural state. Thus, astronomy and other sciences founded on mathematical truths are in the positive condition; meteorology and physiology in the transitory state; while sociology and other kindred concrete sciences have barely advanced beyond the first. G. H. G.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. Zerffi delivered the twelfth lecture of his course on the above subject in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. He commenced by entering into the relations the mythology of the Greeks had borne to their art, and gave a brief outline of what Greek mythology really was, with the view of showing that the study of these myths and legends would develope the faculties for producing original works of art, supplying the mind with bases to work upon. In comparing Indian, Egyptian, and Greek mythologies we were struck with their similarity, and it was impossible that this connection should be merely accidental. Mythology first used the imagination to typify the forces of nature by means of abstract signs, such as triangles and circles. This was the case in savage art, where geometrical figures were employed as symbols of divinities; later, however, the vegetable kingdom yielded these symbols. Certain trees and flowers became the representatives of the hidden, incomprehensible forces of nature. These were succeeded by animals. The animal, endowed with an unconscious vital energy, appeared to have some mystic power, and was considered specially adapted to guard the entrances to palaces or temples. Imaginary combinations of various animals were then made, which were symbols of the secret and terrible power of the gods. The less the sense of symmetry was cultivated in a people, the more frightful would be these combinations. The introduction of human figures as symbolic representations of the powers of nature was a progressive step in the development of mankind. The anthropomorphism which swayed the Greek mind soon taught this people to discard the fear of inanimate things felt by other nations. The cat or bull-headed divinities, the terror of the Indian or Egyptian, supplied the Greeks with motives for the ornamentation of chairs, metopes, &c., and endowed with an inborn gaiety they soon looked upon their own legends of the Gorgons and Gräes as myths. In considering these legends, it was necessary to bear in mind that they all had some meaning, and were drawn from natural phenomena. The winged horse Pegasos, that sprang from the trunk of the monster Medusa, when she was slain by Perseus, and was tamed by a beautiful youth, Bellerophon, referred to the real subjection of the horse by man. The origin of music and poetry was typified in the legend which related that the daughters of King Pieros challenged the muses to try their power of song. Whilst the daughters of Pieros sang the air was darkened and the earth groaned, but to the voices of the Muses heaven and earth listened, the motion of the stars was arrested, and seas and rivers hearkened enchanted. Mount Helicon, the spot on which the concert took place, swelled with delight, till Neptune, alarmed at its increasing size, sent Pegasos to stay it. This was accomplished by a violent kick, but from the spot touched by the hoof of the animal the spring Hippokrene gushed forth, and whoever drank of its waters became inspired with the spirit of music and of song. The volcanic eruptions which, as the study of geology showed, must have been frequent near Cilicia, in Asia Minor, were represented by the monster Typhon, who was said to have been born there. He reached to the heavens, and his arms, which extended to the east and west, terminated in dragons; his eyes were of fire; when he spoke the foundations of the mountains trembled. He was finally conquered by Zeus, who confined him beneath Mount Etna, whence he vomited fire when enraged. Such monstrous creations as these had retained their hold on the Egyptian and Indian mind for ages and ages. Wherever this had been the case art had either become stationary, undeveloped, or unsymmetrical. The Greeks, however, soon broke the spell which fettered their intellectual appreciation of beauty, and the stiff, primitive forms of Assyria and Egypt gave way to well-proportioned human figures. Nature remained the basis of Greek art, but it was a nature refined and purified by intellect. About 900 B.C., the period at which Hesiod wrote his "Theogony," the forms of the divinities assumed symmetrical shapes. This poet, though not so powerful as Homer, described the divinities with much sweetness and grace. In his writings the mystic dreams of the Indian, the prejudices of the Egyptian slave to a hieratic system, or the fancies of the extravagant yet despotically ruled Persian, found no echo. His gods were men, men with divine thoughts and catholic hearts. He combined feelings with thoughts; the abstract ideas of the gods were used in concrete forms; the occult forces of nature were embodied in beautiful human beings, and thus monsters vanished and even the thunderbolts of Zeus served the purposes of symmetrical ornamentation. The human form became the fundamental principle of architecture with the Greek, the sublime object of his sculpture and the only theme of his poetry. To humanise everything; nature and the gods, was the historical mission of this nation. Having given in detail the genesis of the Greeks, Dr. Zerffi drew attention to the fact that Kronos, who was said to have devoured his children, and then given them back again, represented time, which consumed hours, days, weeks, months, and years, and yet continually brought new periods forth. The legends of Greek mythology (he continued) possessed an inexhaustible supply of motives for the sculptor, painter, and ornamental decorator. In illustration of this he related the story of Cupid and Psyche, and referred to the frescoes on the subject painted by Raffaelle to adorn the Farnesina palace at Rome. In these pictures the most charming allegory of Grecian lore was immortalised. This should encourage us to study Greek mythology diligently and systematically, as we should be able to draw thence many ideas for ornamentation. The earliest Greek works served to illustrate their legends, and in modern times Canova (whose exquisite group of Cupid and Psyche alone was sufficient to have rendered him immortal), Thorvaldsen, Rauch, Flaxman, Dannecker, and Schwanthaler had all availed themselves of the store laid up by them. It was not, however, to be thought for a moment that we were to *copy* the masters of Greece, but like the great artists mentioned we should read the legends and then tell them in our own words. In addition, the study of Greek mythology forced us into a closer study of nature, for their mythology simply represented nature dotted with imaginative poetry. To the question of the American poet, Holmes, who asked

> Why floats the amaranth in eternal bloom
> O'er Ilium's turrets and Achilles' tomb?
> Why lingers fancy, where the sunbeams smile
> On Circe's gardens, and Calypso's isle?
> Why follows memory to the gate of Troy
> Her plumed defender and his trembling boy?

we might answer, because in those Greek productions of art, poetry, and science, we met with the first fruits of man's creative power—well proportioned, symmetrically arranged, and full of action. Life with the Greek had been one continual festivity, during which his awakened consciousness had discovered nothing but beauty. He had worshipped his gods in singing to them joyous songs, in running and wrestling; for he had thought it his duty to develope the body and the intellect with which his divinities had endowed him. He had, therefore, either composed poetry or recited that of his gifted bards. He had rejoiced in athletic sports, which perfected the beauty of his harmoniously-constructed form. Everything both in art and science had been with him means for a grateful worship of his ever-smiling, ever-beauteous gods. He had not constructed his temples to exhibit his wealth; his temple had been a prayer in stone to his divinity. He had not ornamented for mere display; his reliefs, his sculptures, his frets or meanders, had been epic poems, lyric effusions, dramatic representations, in marble, stone, or terra-cotta, on his plates, chairs, the bodies of his vases, or on walls. The Greek had always been inspired by higher feelings. Art had not then been the handmaid of some political or theocratic despot, but had been practised, loved, and cherished; had been cultivated and fostered by the whole nation. Art with the Greeks had been the plastic language of ever-praying lips, hands, and minds—and only when the artist was thus inspired could he produce real works of art.

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SIGN-WRITING AND GLASS EMBOSSING.*

The author of this work in his preface claims for it the honour of being the first work published upon the subject. He is in error. The matter has been fully treated upon by Mr. W. Sutherland in an illustrated work published some thirteen years ago by Ackerman & Co., and chromo-lithographed by Underwood, of Birmingham, price 21s., containing plates of letters and ornaments (imperial folio) raised and shaded on ground colours, specially designed and coloured for the use of sign-writers and glass-embossers, accompanied by practical instructions—a work now exceedingly scarce. We may also notice another error into which the author has been led. Speaking of glass-embossing (page 176), he says:—"It is an incredible fact that the art is exclusively confined to the metropolitan writers. In the provinces embossed glass-work is even now seldom seen, and the art is hardly ever practised." We can only express our surprise that any person possessed of average intelligence could have made so preposterous an assertion. Why, ever since the invention of plate glass, and even before that date, thousands of feet of embossed glass have been annually executed by firms in the provinces; and, in fact, it is from these firms that the great improvements in the ornamentation of plate and sheet glass have emanated. We need only name the great firms of Chance Brothers, of Smethwick, and Pilkington & Co., of St. Helens. From these and scores of smaller firms situated in the great towns and cities of the north of England and Scotland hundreds of thousands of feet of embossed glass have been issued, not alone for the ornamenting of London spirit-vaults and gin-shops, but for the decoration of town-halls, exchanges, municipal buildings, the palatial warehouses of our merchant princes, and public and private buildings of every description. The extent to which it is used is enormous, and we venture to say that not one foot in fifty thousand of this is done in London. With regard to the book and its subject, it is evident from the text that the author is a practical sign-writer possessing a very considerable amount of literary ability. He has gathered together a large amount of pleasant matter from the history of type-founding and the various kinds of letters used in printing books. The information thus gained has been very cleverly worked up for the benefit of the student of sign-writing, but is really of more value to the printer than the sign-writer. In fact, the author has made an abortive attempt to elevate mere sign-writing to the dignity of a fine art. Sign-writing is a purely mechanical art; the forms of the letters are arbitrary. The writer is confined to certain set forms from which he cannot depart, if he does, a thousand to one but it is a retrograde movement. This being so, it is only needful for the student to acquire a knowledge of these set forms and their proper arrangement; practice will do the rest. He need not even learn to draw in order to write signs. Of course it is better that he should, but, as a rule, practical sign-writers are about the worst ornamentists possible. Our author's ideas of decorative ornament are, to say the least of them, rather peculiar. He recommends the use of the small sections of stereotype ornament the printers use for setting-up borders and corners in printing. Such a recommendation of the study of ornamental design is certainly unique, and needs no comment from us. We now turn with pleasure to the really practical portion of the work (which, by the way, occupies less than fifty pages of the 208 of which the book consists). This part of the work is really what it pretends to be—a thorough practical exposition of the various manipulative processes used in the art of sign-writing and glass-embossing. The instructions given are sound, carefully and truthfully written, and evidently such methods as the author himself practises, which is a guarantee for their correctness. Had the author confined himself solely to the practical part of his subject (which is strictly the province of such works), we should have had nought but words of praise to give him; but we really cannot see what the science of optics and the rules of perspective have to do with sign-writing.

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* "Sign-Writing and Glass Embossing." By James Callingham. London: Simpkin, Marshall & Co.

CONSTRUCTING ROADS.*

THIS very interesting pamphlet, though mainly intended to make known a new mode of making road surfaces, contains, as might be expected from the extensive experience of its author, much useful and important information on road-making. Mr. Mitchell states that he was a pupil of Telford, the great road-maker, and that, formerly the General Inspector of Roads and Bridges in the Northern Counties of Scotland, he has "been engaged the greater part of his life in the construction and repair of roads." We note that, in a brief historical preface, he repeats another of the many charges of plagiarism that have been brought at different times, and especially during his lifetime, against the celebrated Sir John Loudon Macadam. He points out that Macadam in many of his rules was anticipated by Mr. Edgworth, who, a man of much science for his time, was appointed by the Committee of Natural Philosophy, in Dublin, to make experiments on road construction, in carriage draught, and on the form of wheel felloes. He might have added that Tresagnet, a French engineer, was yet earlier than Edgworth in many of the principles afterwards advocated by Macadam.

All this is no doubt true, but the popular voice is just in ascribing great merit to Macadam in his reform of our common road surfaces. As Sidney Smith, the incarnation of common-sense and wit, wrote years ago,—"Many persons broke stone before Macadam, but Macadam felt the discovery more strongly, stated it more clearly, persevered in it with greater tenacity, wielded his hammer, in short, with greater force than other men, and finally succeeded in bring his plan into general use." Again, "that man is not the first discoverer of any art who first says the thing, but he who says it so long and so clearly that he compels mankind to hear him—the man who is so deeply impressed with the importance of the discovery that he will take no denial, but at the risk of fortune or fame pushes through all opposition, and is determined that what he thinks he has discovered shall not perish for want of a fair trial." Let us hope that Mr. Mitchell will be as successful.

The principle which he starts from is perfectly sound, and is, in fact, that which dominates Macadam's reform, the use of quadrangular blocks of stone or wood, the application of asphalte, and, we may add, the employment of the steam road-roller. He wishes to keep all matters soluble in water out of the road surface. This is done by using stone or wooden blocks, except at their joints, entirely so by asphalte, and in a great measure by the steam roller, which forces the fresh broken stones together before mud can get between them. It is clear that any soluble matter, or matter so constituted as, by mechanical combination with water, to form a paste, is at once acted upon by rain. This is the mud which, in an unrolled road, "forms the cementing material" of the broken stone; and which, in stone pavements, forces its way up between their joints, partly from the surface below. In this way is accounted for the, at first sight, puzzling layer of mud to be seen, during wet weather, even in the paved streets of the city of London, miles away from a macadamised road. Three or four years ago, the author carried out an important experiment, and we have never met with one throwing more light on the actual composition of our ordinary macadamised road-surfaces. He took up "2¼ cubic feet of the crust of the macadamised road in the Mall, in S. James's-park," and caused the mud which cemented the stones together to be washed clean away. This mud was found to amount to 11-27ths of the whole mass, or in the proportion of 11 cubic feet in every cubic yard of road crust. The remaining stones and grit were then examined, and parcelled out indifferent sizes, with the following results:—1 cubic yard was found to contain:—mud, 11·00 cub. ft.; sand to pebbles of 3-16in. in size, 2·40 cub. ft.; stones from 3-16in. to ½in., 6·56 cub. ft.; stones from ½in. to 1in., 4·48 cub. ft.; and lastly, stones from 1in. to 2¼in., 2·56 cub. ft., showing that only 1-10th part of the whole 27 cub. ft. retained the original form and size of new granite metalling.

We now come to Mr. Mitchell's own plan for the reform of macadamised or broken stone roads. He proposes to bind the broken stones together by means of Portland or of other hydraulic cement grout, in the proportions of four parts of clean broken stones, one and a quarter to one and one-third of clean sharp sand, and one of cement of the best quality, able to stand a tensile stress of 500lb. to 600lb. on a bar 1½in. square. Complete instructions are given for making a road on this plan. He prefers to make it in two layers; the first to be put down roughly for a thickness of three or four inches, and when consolidated the second layer, of the same depth, should be laid, and carefully rolled with a heavy roller. In order to obtain access to the water and gas pipes, the concrete is to be cast in blocks 3ft. by 4ft., separated from each other by 1½in. of joint, filled with concrete grout. To remove the blocks, the joint is cut out, and they are raised by a moveable crane. Mr. Mitchell states that under traffic at Inverness for the last four years and a half this kind of road-crust has given good results. The second trial, carried out on 100 yards of the Mall in S. James's Park, was a failure, "the surface breaking up under the traffic." His explanation is that the surface was accidentally rolled before the cement had consolidated, thus injuring its crystalline structure. Fifty yards laid down in 1866, at George IV. Bridge in Edinburgh, have given better results.

The idea of using concrete in this way is a very simple and obvious one; but the application is one of those that could only be fairly tested by many prolonged and careful trials under heavy traffic. We do not consider that such a road could be easily repaired—that, for instance, ruts, such as would be sure, sooner or later, to form themselves, could be rapidly and cheaply mended; cutting them out and filling with fresh concrete, would, we should expect, be an inefficient remedy, and until this concrete got consolidated the road could not well be opened to traffic.

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[*] "A new Mode of Constructing the Surface of the Streets and Thoroughfares of London and other great Cities, by which Mud and Dust will be greatly diminished, and the Expense of Maintenance and Repair much lessened." By Joseph Mitchell, C.E., &c. Second Edition. London: Stanford, Charing Cross, 1870.

ARCHITECTURAL ASSOCIATION.

AT the usual fortnightly meeting on Friday evening last, Mr. T. H. Watson, President, occupied the chair. The ordinary routine business having been got through, several new members were elected.

Mr. J. D. Crace then read the following paper

ON THE MODES OF DECORATIVE TREATMENT ADAPTED TO VARIOUS MATERIALS.

Among the many varieties of skill which are necessary to the excellence of each work of art, there is one which, as it seems to me, lies in danger of being overlooked, or, at least, of being treated with something like oversight—I mean that particular skill, which must emanate partly from the designer, but far more from the workman, by which the special qualities of the *material* to be dealt with are recognised, valued, and expressed. At the first glance we should be apt to say that a beautiful form will be beautiful whatever the mere material in which it is shaped; but this is now so generally admitted to be a false doctrine that it is not necessary for me to pursue the arguments against it. My present object is to show that, given the design suited to stone, wood, or metal, there yet remains to the workman an excellent field for the exercise of his perception and the display of that particular skill by which every excellence of his material is made the most of. Without going the length of saying that *every* variety of *every* material calls for a special style of execution, I *do* say that the subject demands much closer attention than it receives, and that it is well to bring forward some of the more notable instances, and to point out how or where we may look for the peculiarities of texture or substance which should influence the use of our tools. Let us, then, begin by considering the *solid* materials which may be moulded or carved. The first, and most important to architects, are those materials which may be classed generally as stone. Under this head are included materials of very varied qualities and characteristics—so varied, indeed, that we almost may say that each variety requires its own treatment in sculpture. We may, however, group them together broadly under a few heads, and then, looking back historically, we shall see that the whole style of art was, in early ages, affected by the peculiarity of treatment rendered necessary or possible by the characteristics of the materials used; bearing in mind that, the most esteemed materials being used for the most noble monuments, and those monuments having the strongest hold upon the mind and the most powerful influence in art, so the working of those materials gave the keynote to the art-work of that age or country.

GRANITE.

Thus, as we find the earliest and grandest sculpture of Egypt worked in granite, the beautiful and durable stone of Assouan (Syene), so we find all Egyptian sculpture partaking to some extent of the characteristics of execution most suitable to that material. Broad, even surfaces, crudely-rounded contours and obtuse or rectangular sections prevail. A thin "arris" or an acute angle is almost unknown. The value of the material also is much enhanced by a high polish, which is only compatible with broad surfaces and bold roundings. Where greater detail is required, it is either cut deeply, at right angles to the surface, or slightly, through the polish, and left dull in contrast with the polish. And as the forms must be of the simplest and most conventional, so the detail must be very limited and very expressive.

MARBLE.

In the beautiful white marble of Greece we have a material the admirable qualities of which may almost be said to have had a large share in perfecting Greek art. The workman must have taken delight in its exquisitely even grain and pure colour, admitting, as they do, of the most delicate expression of form and of the highest mechanical finish. Indeed, it is impossible to compare the progress of Greek sculpture from the archaic to its more perfect development, without feeling conscious that the artists were gradually recognising the wonderful capabilities of their material and were led on to fresh efforts and more careful study in consequence. In addition to its beauty, the ease with which it is worked and its durability encourage the use of fine sections in mouldings, sharp arrises, and delicate detail. The even, crystalline granulation of surface is admirably calculated to express the roundings and the most subtle gradations of shade; consequently he who, overlooking these special qualities, executes his work as if in a coarser stone, throws away much of the excellence within his reach. The semi-transparency of marbles gives a peculiar value to their sections under some conditions, and occasional acute angles in section may almost be said to be necessary to the full exposition of the nature of the material. It must not be supposed that, even among the ancients, an equal amount of intuitive skill was possessed by all the workmen employed on one building. Let any one who has the opportunity examine the several blocks which formed part of the frieze and cornice of the Erectheum, now lying in the British Museum. On looking closely he will find an immense difference in the method of finish in one block and in another (compare those numbered 127 and 129). Even at this lapse of time, one can almost say that the worker of one block was thinking of his work, the worker of the other of his wages.

The student of "material" will also do well to examine very carefully the sections of the draperies and other portions of the best Greek sculptures. He will find nothing overlooked there; every surface, every edge or angle is so worked as to use to the best purpose the light which falls on it. If, too, he observes in these works the treatment of the human face and figure, he will learn how the *breadth* of light must be preserved, and how, when emphasis is needed, the shadow must be cut so deeply as to overcome the luminous white of marble. What I have been saying applies to the white marble only. "Veined" or figured marbles admit only of the boldest moulded forms, and not at all of carved detail, which only quarrels with the "figure"—the material's natural beauty.

STONE.

In the commoner varieties of building stone, we have materials of a grit variously coarse, and more friable, both in working and in wear. These qualities necessitate coarser arrises and fillets, and, therefore, heavier contours in the mouldings. It is well to bear in mind that the apparent finish or delicacy of mouldings is to a great extent determined by the delicacy or otherwise of the narrow fillets. The colour of the common stones, again, is less even than that of marble. The treatment of the detail has, therefore, to be vigorous enough to overcome its inequality. In comparing the buildings of Greece with those of Rome this difference of treatment is very observable. The detail in stone, requires stronger definition, which is obtained by greater relief and depth of cutting; so that often where low relief would suffice in marble, high relief and bolder forms are requisite in stone. I am, of course, supposing the conditions of light or position to be equal. Climate or other special circumstances may largely affect the treatment, nor am I now considering special *design* so much as special *workmanship*. It will be readily understood that according to the coarseness or fineness or friability of the stone the treatment may be modified upon the same general rules. It may, however, be as well to enumerate a few leading points. In carved details stone allows considerable freedom. Deep undercutting is admissible and useful when not carried to such excess as to expose the subject to risk. Projecting masses must always be corbelled, so to speak, in such a way as not to have a tendency to break themselves off. Thin edges are incompatible with so friable a material, but lightness may always be given by bevelling back to the ground. Where strength is expected, a rectangular section is agreeable to stone. Indeed, a square edge seems constantly demanded, and an edge presenting an angle of less than about 60° or 75° is too weak for the material. To sum up, the ordinary building stones require a firm, vigorous, substantial treatment, with sufficient breadth and depth of cutting to overcome the more or less irregular colour, according to the distance at which the work is intended to be seen. Of

STUCCO OR PLASTER,

the treatment may be classed under two heads—that moulded by hand, and that cast in moulds. The two methods may also be blended. In working plaster relief ornament by hand, a great freedom of touch and variety of form are attainable and desirable. At the same time, thin edges or deep undercutting are rendered undesirable by the friability of the material. The degree of finish must depend rather on the conditions of application, since its texture may be rendered as fine as that of ivory, and a pure and even tone of colour may be obtained, either in the material or by subsequent tinting. Almost any degree of vigour may be given by bold modelling, keeping the lights broad and not too much softening away the tool marks. Excellent examples of plaster treatment may be seen in the ceilings of many old London houses of the period of the Georges, and the elegant and spirited stuccoes of both ancient and mediæval Italy afford valuable teaching. Where the ornament is intended to be painted or coloured care should be taken to avoid narrow quirks, which may become stopped, and thin edges, which will easily be broken. If the relief be very low an indented outline is useful. For the treatment of plaster ornament cast from moulds we cannot do better than observe Arabic or Moorish work. Ornaments produced in this way should be clear, well-defined, not undercut, and arranged so as to draw readily from the mould and require little subsequent finish. It is applicable, of course, chiefly for repeated or diaper ornament. In Moorish work beautiful soft gradations of shade are obtained, *not* by rounding or moulding the face or edge of the ornament, but by introducing two or three distinct *strata* of ornament, interlacing with each other, each on its own level—a plan in every way adapted for work cast in moulds. In combining the cast and hand-worked methods, the simpler and more rigid parts may be cast, leaving the lighter detail to show the workman's hand. Many of the foregoing remarks apply equally to

TERRA-COTTA,

in which, however, partly on account of the coarser material, and partly because its use is most often external, greater boldness of execution is demanded. A certain rough plastic touch, with rather hard edges and strong surface lines, tell best. (See the details of the Certosa at Pavia, and, for the higher forms of art, the Florentine portrait-busts of the fifteenth century, especially No. 7,621, '61, and S. Jerome, 8,383, '63, in the Kensington Museum.) Undercutting, fine arrises, and fillets should be avoided. From terra-cotta we easily pass to the *glazed* material, as Della Robbia ware, and to

POTTERY.

Here angular sections are to be avoided, the surfaces all rounded; and it must be borne in mind that as a number of small high lights only perplex, it is desirable to maintain great simplicity and breadth in the moulded surfaces, and distinctness in the outlines of the forms to be expressed. Where the design is set off by a coloured or tinted ground *without* glaze, a careful outline and sharply-executed detail are required. For examples we have but to look at the productions of Wedgwood, many of which are, in their way, perfect. Under a glaze, however fine, low relief requires a more delicate and softened treatment, with an avoidance of hard outline or sudden protuberances. Of this class of work is the Celadon ware, of which a splendid example is the "Cobden Vase" on view at Kensington. The conditions of this material are—on an opaque tinted ground, a semi-transparent white relief with a high glaze over the whole—conditions favourable to extremely-subdued relief and softened outline. I allude to these finer descriptions of pottery because, in the form of medallions, &c., they are occasionally used to decorate either the building or its accessories.

WOOD-CARVING.

The grain and texture of wood vary so considerably that comprehensive rules of general application cannot be laid down. It is not difficult, however, to show in what respects general rules may be observed, and at what points they must diverge according to the material to be dealt with. Some woods are of so fine a grain and so close a texture that they are capable of almost unlimited delicacy of finish; and of these the harder sorts will take a soft-hand-polish which places them almost on a par with ivory. I need only refer to that wonderful specimen of wood-carving, the cabinet by Fourdinois, of Paris, from the Paris Exhibition of 1867, now at Kensington. Work of this description is, however, so exceptional as not to demand so much notice as the carving of the various woods in ordinary use. In such woods as oak, walnut, or mahogany, we have materials with a more or less pronounced grain or texture, in colour not quite even, readily cut with a sharp edge, and of a tenacity altogether different from the brittle nature of stone, enabling it to bear considerable undercutting or perforation without risk. These are all qualities admitting of or requiring special treatment. To commence with the first-named condition—the visible grain or texture. It is obvious that the workman will select for his carving that wood which is most *even* in texture, grain, and colour, since all strongly-marked grain or figure tend to confuse and destroy the effect of his work. Still, even when he has done this, he has in *oak* a very apparent grain, and here and there some amount of "figure." The carver in oak, therefore, must seek carefully to execute his work in such a way as to overcome the opposition which these qualities present. His lights must be preserved broad and clear and in high relief; the leading intention of all foliage distinctly marked, the finer lines or stems preserving a sharp outline. The shadows must be bold enough to explain the forms, intensity being given by bold undercutting. Much assistance to the expression may be given by the actual tool-marks. Nothing is so fatal to the spirit of wood-carving as glass-paper. Yet, bold though the execution of the work be, it need not appear coarse; the strength and tenacity of the material allow of thin edges and considerable freedom as to detached and perforated work. But, above all things, let the wood-carver avoid a thick square edge—an edge at right angles with the face of the work This at once gives his work a *stony* character, which no mere finish will obviate. I know no examples better illustrating the exact capacities of oak than the exquisite stalls of Amiens (1528), and the beautiful panelled door enclosure by Paul van Schelden in the Town-hall of Oudenarde. There is an excellent model of the latter in the Crystal Palace. In walnut-wood we have a material extremely suitable for the carver's art. There are many varieties, differing greatly from each other; some abounding in strongly-marked, and often beautiful figure, others presenting a mellow even grain (with but a slight "streakiness"), and an agreeable grey-brown tone of colour. When this latter class of wood is used (and its fine pores are, upon the completion of the work, filled up by a judicious wax rubbing), results may be obtained as satisfactory in the way of wood as those from bronze are in the way of metal. To those who would learn the style of finish and execution adapted to walnut-wood, I would point out the numerous works of the Siennese carvers, the stalls of S. Pietro at Perugia and of Santa Maria Maggiore at Bergamo, both by Stefano de Bergamo. There are also some admirable benches and a desk in the Sala di Cambio, at Perugia, and the numerous grand doors in the Vatican likewise present excellent specimens. In the Museum at Kensington there are a few good works of this class; modern Siennese work they are, but the artist has well caught the style and method of the old carvers. I do not call to mind any prominent good example of *ancient* carving in walnut-wood in that collection. The numerous coffers in the Cartoon Gallery have no special merit of execution. I must not be understood to proscribe the use of the figured class of walnut-wood. On the contrary, this, beautiful in itself, should be used for such plain, flat surfaces as will exhibit and derive embellishment from its beauty. It will be observed in the examples I have quoted that a certain *precision of touch* is common to all of them. The lights are crisp and well-preserved, always with a view to carrying the eye along the motive of the ornament. If it be a scroll with a fine stem connecting foliage or husks, observe that the eye is always made to travel along the centre-line of the curve. The section of foliage or stem is such as to take the light in the proper direction. The fine stem is so sharply cut (though sometimes a mere thread) as never to fail of expression, either by means of its fine high light or sharp little shadow. In this way even the finest lines are not allowed to be lost in the dark colour of the wood. It will be found also that excellent use is made of the tool-marks, which greatly aasist the expression of the work.

IVORY.

Holding a place superior, but closely-allied to the finer woods, is ivory. This beautiful material has been very highly prized for the purposes of art from the earliest times. Its close, homogeneous texture peculiarly fit it for the finer kinds of carving, and the beautiful surface of which it is capable, together with its soft even tone of colour, have frequently induced artists to adopt it for works of a size considerably beyond what we need consider now. The form and size of its natural growth may, in a general way, be taken to limit the size of its use, which is therefore ordinarily confined to a surface of a few inches. There is hardly any limit to the finish and elaboration of detail which may be given to a few inches of ivory. High relief or low relief appear to equal advantage, and the conditions attached to it appear most simple. The work must never be rough or coarse, and must always exhibit the exquisitely delicate texture of surface which is natural to it. Its strength admits of its being undercut to almost any extent, and of being worked to almost any degree of tenuity, whilst the remarkably soft gloss of its surface exhibits to advantage either the boldest or most delicate roundings.

METALS.

The several metals in use for ornamental purposes present conditions different altogether from those distinguishing the materials which we have been considering. If we except cast-iron, the condition of friability is wanting, and we are therefore at once admitted to the use of the thinnest sections and the most acute angles. Their different degrees of ductility also represent a special quality to be expressed. Their capability of being bent and twisted without losing their strength is a valuable quality to be recognised. In treating each separately we shall have to be guided partly by the different degrees in which they possess these qualities, partly by their colour, and partly by the greater or less extent to which they exhibit bright high lights, or are capable of receiving a burnished surface. Let us first take

WROUGHT-IRON,

for the artistic treatment of iron must be guided by its finest capability, and that is to be found in its readiness, under certain conditions, to receive the direct impress of the worker's hand. We have, then, a material of a dark colour, and which, under ordinary conditions, does not exhibit bright high lights. A vigorous treatment and strong indentation are therefore demanded for detail. Its liability to corrode prevents any reliance on the effect of fine surfaces. It possesses, when being worked, considerable ductility, of which the workman must avail himself fully; also great elastic strength, which permits it to be bent or twisted extensively without frequent support. These qualities allow of very acute sections, sharp mouldings, and narrow fillets, all of which will be found expressive, but the finer the sections the more careful must be the finish. Excellent specimens of wrought-iron ornament are numerous enough among country inn "sign" brackets, and the balustrades and gates scattered about the country, all dating prior to the present century. The Hampton Court gates (not long since removed to the Kensington Museum) are splendid examples of what may be done with the smith's hammer. At the same time, I am disposed to doubt the desirability of working the ornament to such a paper-like thinness in a material which corrodes so readily as iron.

(To be continued.)

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THE HOLBORN VIADUCT.

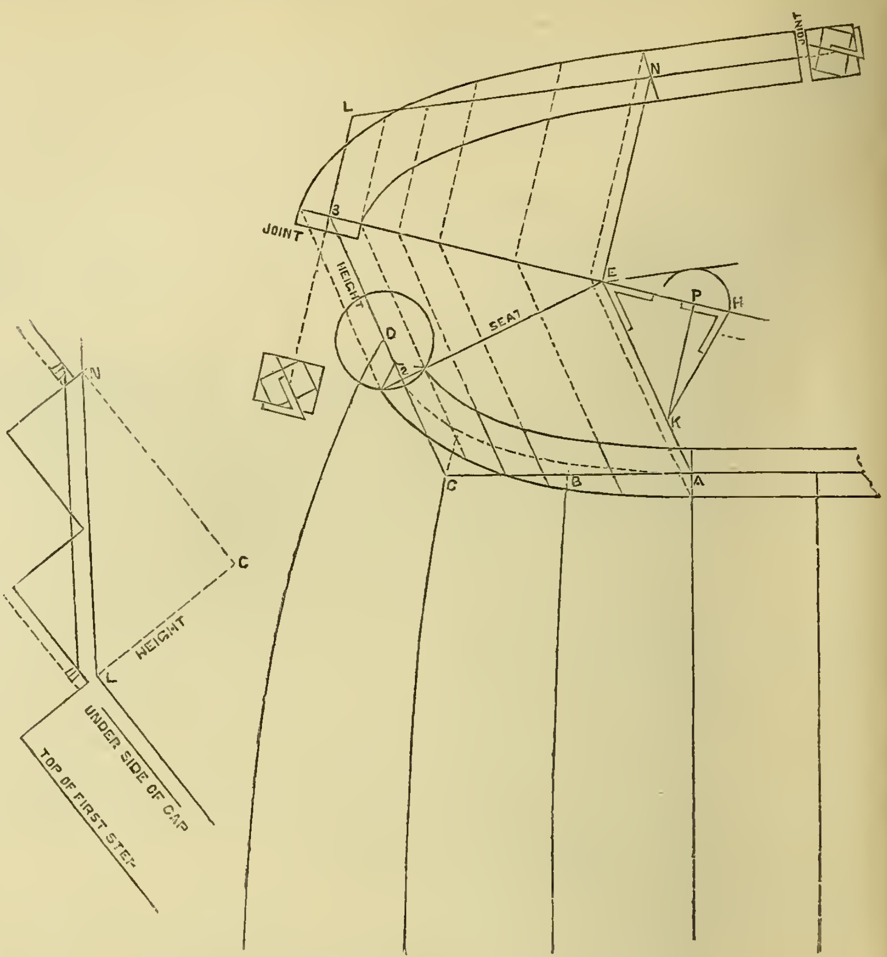
IN the course of his paper on the "Selection of Building Sites," recently read before the Royal Institute of British Architects, Professor Ansted incidentally cited the case of the Holborn Viaduct as pointing to the necessity of having good foundations. In the discussion which followed,

Mr. Haywood, the engineer to the City of London Commission of Sewers, and designer of the Viaduct, concurred in the remarks of the Professor as to the selection of sites, but was at a loss to know why he dragged in an allusion to the Holborn Viaduct. If he meant to infer that the foundation had given way, he could understand the allusion, though the inference was incorrect.

Professor Ansted here said that his impression was that the foundation had partially given ay.

Mr. Haywood, in continuation, then said that as few things were so instructive as an account of a failure or a partial failure, he would narrate briefly the circumstances connected with the getting in of the foundations, from which it would be self-evident that the fault did not lie there. He hoped that at some future time, either in that room or in another place, he should be able to bring the matter more fully before the profession. The old bed of the Fleet River was 200ft. or 300ft. wide at the spot where the Viaduct is carried across the Valley, and the bed of the existing Fleet Sewer was about 22ft. or 23ft. below the old level of Farringdon-street at the point where the principal arch of the Viaduct spans that street. and this bed was of clay. The excavations for the foundations were carried 7ft. or 8ft., and in some cases more, below the old bed of the river, right into the solid blue London clay, and the foundations were got in bit by bit. Concrete of the best quality was used, and the greatest pains taken to ensure efficiency in respect of foundations. This efficiency was attained, for, on the authority of the engineers appointed by the Corporation to report on the nature and causes of the fracture of the granite columns, it had been stated as beyond doubt that the foundations would bear five or six, or even seven times more weight per square inch than they would have to bear were the Viaduct densely packed with human beings and vehicles of the heaviest description. The engineers referred to had reported that not the slightest movement had taken place in the foundations. The fracture of the columns was entirely due to bad joining. If any fault attached to him in the matter—and he spoke candidly—it was that he had trusted too implicitly to the conscientiousness of the workmen who were to carry his design into execution, and had calculated on such workmanship as he himself should have put in had he been engaged in the erection of the columns. He had endeavoured to make too fine a joint, and with such large masses of granite almost mathematical accuracy was necessary in the joining an inequality of only a sixpence in thickness being capable of causing a serious fracture.

Professor Ansted, in reply, expressed his regret that he had made the allusion in question to the Viaduct, and begged to withdraw it in the face of the very satisfactory statement made by Mr. Haywood. From that statement it was quite clear that Mr. Haywood was blameless in the matter.



NEW ELEMENTS OF HAND-RAILING.—PLATE XVIII.

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NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 28.)

Plate 18.—The Side-Wreath—Starting from Newel.

WHEN a hall is large and spacious, then the stairs starting should present a grand and imposing effect. The newel stands out, curve projects on floor, and extends on the side, to third or fourth riser, as the drawing shows.

To lay down the plan: Commence with a straight line for centre of rail; say that through A. Let A, B, C equal two square steps. Assume C, on second riser, as a fixed point. Then the line from C may be drawn to make any angle (except a right) with C A.

It will always be ordinate, no matter in what direction the line may be drawn. It causes the wreath to fall exactly level at the mitre cap, and directs the construction of mould.

Let us take C D for ordinate, and D as centre of newel and mitre cap. Here observe that the centre of newel can be made to stand at any point on line C D, and the curve on the floor be either expanded or contracted to suit situation.

This understood—draw size of cap. Set off half width of rail on each side of line C D. Draw parallel with it, cutting cap, which gives commencement of mitre. Let seat from 2 be square with C D. Next, draw from A, parallel with ordinate, cutting seat at E.

Remember that the height must be obtained before pitch can be drawn. The two square steps on the left show under-side of rail resting on centre of balusters. Set off half its thickness. This done square over N C. Make it equal to A C on plan. Then L C gives height. Let that of 2, 3 on the right equal it. Next join 3, E extended; and we have the pitch. Dotted curve shows centre of rail, and lines C 2 and C A its tangents. Set off half width of rail on each side of curve. Then draw any number of ordinates cutting pitch. Square these over. Let E N equal E A, and 3 L equal 2 C. Join L N extended. This, to be correct, must equal corresponding letters on left.

Now find points and trace curves on mould. Let the straight wood for joint equal mitre at 2. Find bevel for joint on straight shank, by drawing a line from E parallel with N L. Next, square over any point on pitch—say P. Let this be centre; and for radius a circle touching line from E, cutting at H. Join H K, and bevel is obtained. The angle formed by pitch and E A gives bevel for joint on left.

Square sections show their application.

Examine the drawing and see how the angle of tangents meeting at C affects height of newel. It is evident a riser added to a short baluster gives height of newel from top of first step to under-side of cap; because the tangents meet on second riser. Again, move point C to the right. This increases length; but, let C stand on first step; then the newel becomes shorter. Elevation on the left shows all this. Line N C being fixed and equal to tangent A C. Therefore, the length of tangents on ground plan regulates height of newel.

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Royal Institute of the Architects of Ireland.—The ordinary general meeting of this Institute was held last evening, when Mr. J. M'D. Bermingham, Associate, read a paper on "The President's Address and Building Surveyors."

International Exhibition of 1871.—The following noblemen and gentlemen have consented to act as judges to select paintings for the forthcoming exhibition:—The Viscount Bury, M.P.; the Lord Elcho, M.P.; Sir Coutts Lindsay, Bart.; Mr. Alfred Elmore, R.A. (representing the Royal Academy); Mr. Alfred Clint (representing the Society of British Artists); Mr. Alfred Hunt (representing the Society of Painters in Water Colours); Mr. Henry Warren (representing the Institute of Painters in Water Colours); Mr. F. Dillon; and Mr. H. S. Marks.

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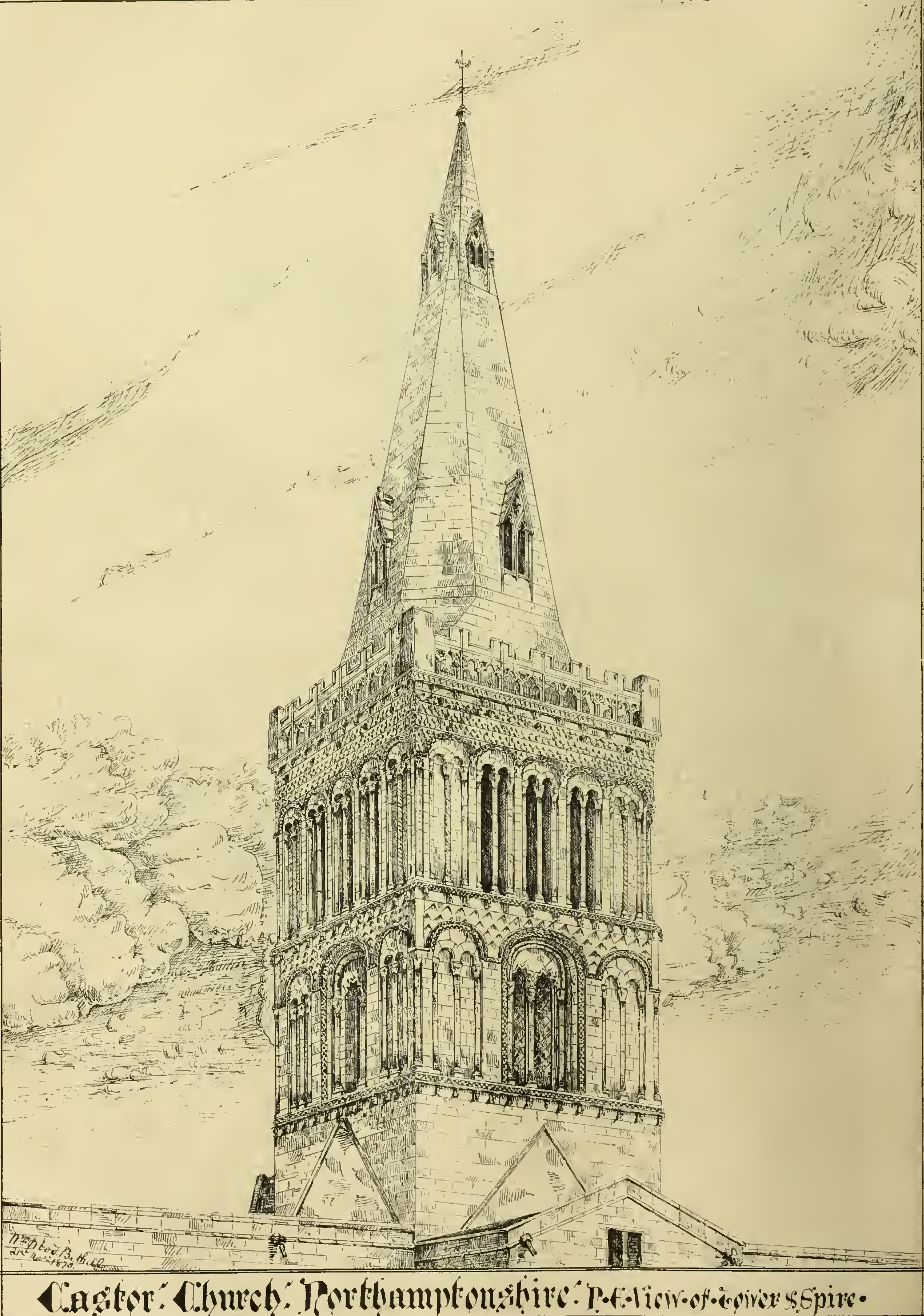
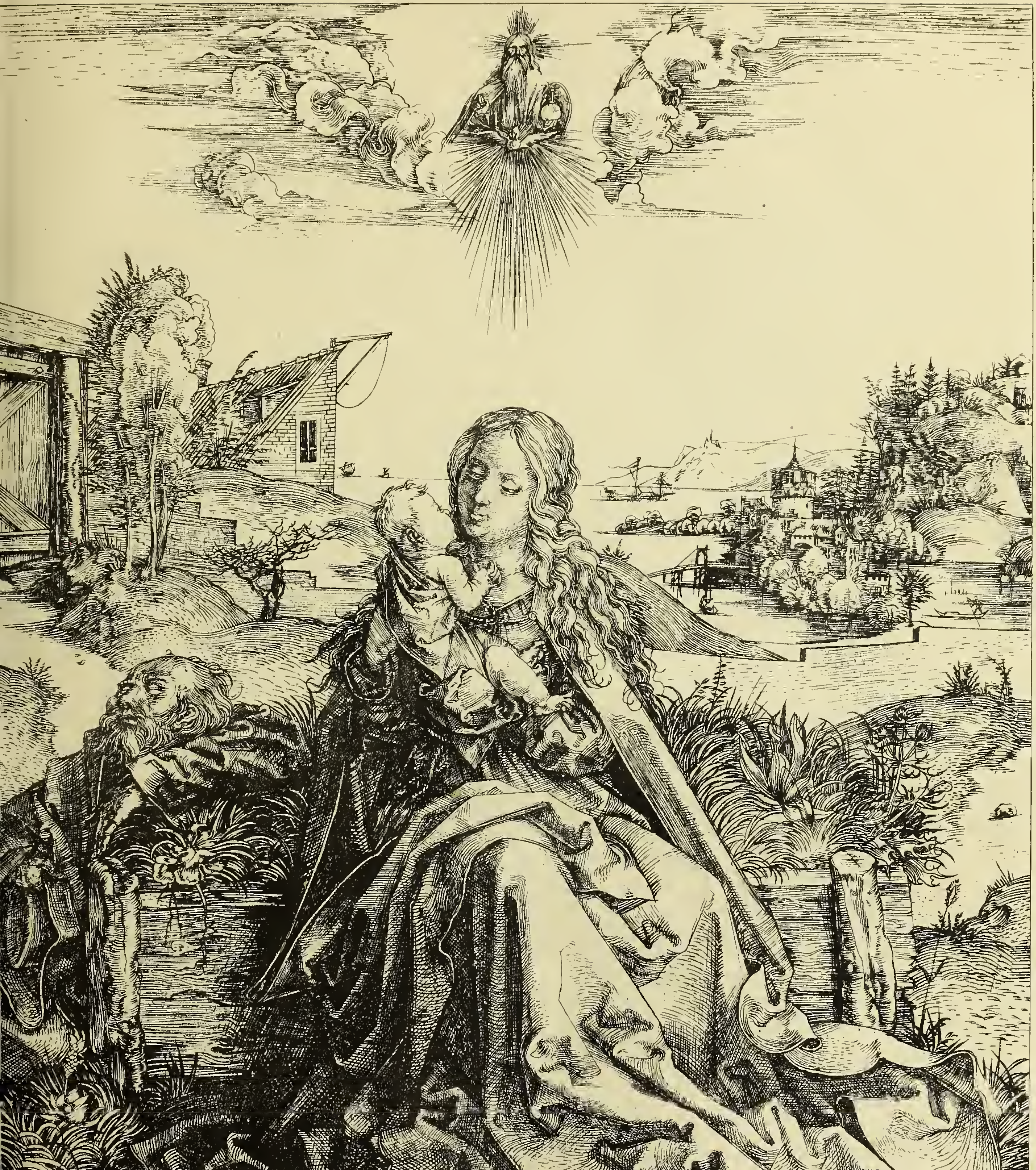
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



Castor. Church. Northamptonshire. N.E. View of Tower & Spire.

Photo-Lithographed by Whiteman & Bass London



hoto-Lithographed by Whiteman & Bass, London.

THE VIRGIN AND BUTTERFLY BY ALBERT DÜRER.

Furniture & Decoration.

DECORATIVE PROCESSES.

By "An Experienced Workman."

MUCH has been said and written both for and against the use of imitations of woods and marbles. We do not intend to discuss the question here; suffice it for us that custom, practice, and precedent sanction their use. Mr. Owen Jones, Sir Digby Wyatt, and others of the highest authority on decorative art, admit of imitations being used wherever the real wood or marble could or would be used in architectural construction. That this is a sensible and right view of the question we are persuaded that none but crochetty critics will dispute. However, we are safe, so far, in the fact of its being so universally used in all classes of houses, public buildings, shops, &c., both for interior and exterior decoration—for purposes of utility, as well as for adornment; and we may rest quite assured that its practise will never be discontinued, however much the followers of John Ruskin may preach against it. Even from an economical point of view its value is great, inasmuch as no other kind of painted work will bear cleaning so repeatedly as grained work, &c., without injury. As a means of decoration it is valuable. Beautiful combinations may be formed with the great variety of coloured woods and marbles available for the use of the artist, which in skilful hands may be worked up into the most complicated and tasteful forms; and if good taste be exercised in the selection of the colour of the woods and marbles and their harmonious arrangement really artistic works may be executed. We cannot see why works of this class may not be ranked with the other specimens of ornamental art which are usually placed on a much higher scale. However, with that we have nothing to do here, simply confining ourselves to the manipulative processes employed in working them.

How long ago, or when the art of graining first originated, we have no record, man being essentially an imitative animal, and he may have begun very early. Let that be as it may, we can only record our own experience. We remember seeing, upwards of thirty years ago, in an old mansion in Yorkshire, some imitation oak, which, by well-authenticated testimony, was proved to have been done upwards of sixty years before; and it was, at the time we saw it, undergoing the process of cleaning and varnishing, and, although dark with age and repeated varnishings, it was in a condition to last many years.

Oak graining, of which we are now about to treat, is peculiarly an English process. To an Englishman the oak tree is an embodiment of strength, grandeur, and utility; its praises have been sung and its sterling qualities lauded by poet and sage. To it the stability and beauty of our ancient baronial halls, and the half-timbered dwellings of England's sturdy squires and yeomen are due. Our churches and municipal buildings were clothed with oak, in panelled wainscot and glorious carved screens. For quaint furniture, from the throne of the monarch to the rude bench of the cottager—to all these and countless other uses has this famed English wood been applied. No wonder Englishmen are fond of this truly national tree, and hence the very natural desire to see it about them in every form—oak doors, oak sideboards and chairs, &c. Indeed, this fondness for oak has led to its being the only wood which in England is universally imitated. Wherever we go, in hall or cottage, we see this wood, either real or imitated. The beauty and novelty of its grain and markings peculiarly adapt it for being imitated, and it is a singular fact that out of the millions of feet of oak planks cut up yearly no two planks are alike. It needs but to take the thickness of a shaving off an oak board, and the figure or marks will be changed. No other wood with which we are acquainted possesses this quality; all others have a sameness and a mechanical repetition of pattern in their markings from which oak is entirely free.

There are several methods used for imitating oak, with various degrees of success. The most ancient of which we have any knowledge was done by painting the work with a graining colour, and then making all the figures or markings with the end of a tallow candle; the result was that the graining colour dried hard everywhere, except on those places touched by the tallow, which was then wiped off with a piece of flannel leaving the marks of the clean ground colour. Another plan was to mix a little dark colour with sweet oil and beeswax, and with a pencil or fitch the colour of the various markings was put in upon the bare ground colour. The graining colour was then mixed with beer, and spread over the work, and then flagged with a duster or large flat tool made for the purpose. When this was dry, the marking colour was washed off with turpentine. This system is in partial use even at this day.

The next great stride in the march of improvement in oak graining seems to have been the natural out-growth from this last process, and is very extensively used in certain districts, and notably in the metropolis. It is called "spirit-colour graining." When well and properly done it is a useful and cleanly process, having this advantage over any other method, *i.e.*, that work done with it may be grained and varnished in the same day, which, under certain circumstances and for certain work, is very valuable, especially where, as in offices, &c., unnecessary interruption of business has to be avoided. This process is carried out as follows:—To mix the graining colour, grind a quantity of the best washed whiting in turpentine; add such a proportion of either burnt sienna, Oxford ochre, burnt umber, raw umber, or part of one and part of another, according to the colour required, as will stain the whiting to the required depth of colour; then add sufficient turpentine-varnish to bind or fasten the colour when thinned to a working consistency with turpentine, which may be best ascertained by trial before commencing any important work; the colour is then spread evenly over the surface, and stippled or streaked with a duster or flat brush; it is now combed quickly (in the manner hereinafter described). If this is not done quickly, the colour sets or dries, and when once set the combing cannot afterwards be done. The colour dries quite dead. When it has stood a short time it may then be figured or marked in imitation of the marks seen in the real oak thus:—Dissolve Scotch soda in water—let it be tolerably strong—add a little burnt sienna ground in water. Now take a flat fitch (hog-hair), dip it into the solution of soda, and thus mark out or put in any figure that may be desirable, taking care not to use it too freely, or else it will run and make marks, which are not required; it must be borne in mind that wherever the soda touches there will be a mark. When the work is all figured, the whole must be well washed with a sponge and plenty of clean water, which will clear off the soda, and wherever it has touched the graining colour will be destroyed, and will wash off, leaving the figures clear and bright. The work must then be brushed over with weak beer and water, in the proportions of half beer and half water, and then over grained in the usual manner. A door may thus be grained and varnished in a couple of hours' time. The solution of soda is sometimes dispensed with, and turpentine is used instead. The veining fitch is dipped into turps, stained so as to show the marks, and is wiped off again before it has had time to dry, using a flannel rag for that purpose. Wherever the turpentine touches the spirit colour it immediately softens the turpentine varnish, which may then be wiped off, but only while it is wet; and as it of course dries very soon, the work requires to be quickly done, or else it is labour lost. This is not so cleanly in using as the soda, but good work may be done with it. The heart or sap of oak may be admirably imitated on this system, especially upon moulded surfaces. The heart must be marked in with the fitch or a sable pencil and turpentine, as before described, and while it is wet must be brushed or softened all one way, that is, in the direction in which the sap runs—the direction of its growth. If this is done well the light and dark edges of the sap of the real wood may be very closely imitated.

But the most important and best system of graining oak is the oil-colour process. It must be understood that oak has two distinct characteristics. The first is the grain of the wood, which is formed by the pores, and which always runs the length way of the plank, and, in fact, of the tree also, and this is fine or coarse as the case may be; the other is technically called "the figure"—the dapple, the veining, and the lights of the oak. These markings, almost in every case, run across the grain, and, as a rule, have a silvery reflection, and stand out lighter and brighter than the grain, and sometimes they have a light silvery edge and a dark centre. Of course, both the grain and the markings are different in different descriptions of oak. In the English oak the grain and the veining, or figure, are much finer and closer than it is in the foreign oak. The Dantzic oak, for instance, is exceedingly coarse or open in its grain or pores, and the "lights," or figure, are, as a rule, in broad and thick lumps, without much grace or beauty of form; while the figure in English oak is arranged or flows in graduated curves, having a beauty peculiarly its own. The grain and the markings require different methods of working, and there is no method yet invented does this so effectively and so well as the oil process.

Before proceeding further we must say a few words on the preparation of grounds for graining. New work should be well dusted before being primed. After the first coat is dry it should be rubbed down with sandpaper and stopped with good sound putty. Three coats should then be put on and the work sandpapered between each coat; except this be done no good work can result. The finishing-coat should be mixed with three parts oil to one of turps. The colour for light or new oak, commonly called wainscot, should be of a light creamy buff, made with Oxford ochre and white, and a little vermilion or Venetian red. Some grainers like a white ground for this very light oak, but it has a rawness of look which is not at all pleasant to look upon. For a middle shade of oak the colour should be stained with Oxford ochre, Venetian red, and a little burnt umber; and for dark oak with burnt umber, Venetian red, and a little orange-chrome. These may all be modified by admixture with black to a degree according as to whether the oak when finished is to be warm or cool in tone. And here we may note that the colour of the ground is of vital importance to the effect of the work when finished. Many persons don't care much about the ground colour so that it is light enough, as they depend upon the glazing colour to bring it up to the required shade. This we are quite certain is a mistake, for if two panels are grained, one on a white or nearly white ground and the other on a rich-coloured ground, the former cannot by any amount of glazing be brought to the same richness of colour as the latter; therefore it is the wisest plan to work upon ground colours which are of the same tone of colour, or nearly so, as the work is intended to be finished. The contrast also between the graining colour and the ground colour should never be violent. When it is so, the work has a staring vulgarity about it very undesirable. The "figure" or markings stand out so prominently and so positive that all flatness and repose is destroyed. This is a very common fault with grainers, and one that should be avoided. This class of grainers are very fond of bright chrome-yellow grounds and of glazing their work with burnt sienna, thus making it "foxy," and, as a matter of course, ugly and vulgar.

(*To be continued.*)

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ON ARCHITECTURAL DETAILS APPLIED TO OTHER USES.*

THE subject to which I venture to call your attention has been to me a constant source of difficulty, but it is only before a society devoted to the special study of art that I could venture on a discussion on what would generally sound like dry and tiresome details. I am concerned not with the trouble that besets artists in putting their thoughts into execution, but with certain principles of design, and I found some difficulty in finding a suitable title or description of the remarks I may have to make. By the title I have chosen I mean the principle upon which designers make use of the various constructive members of buildings which are the necessities of construction, and which in architectural structures offer so many opportunities to artists, rather than think out methods suitable for object they have to design. It is the principle of borrowing and applying rather than inventing in each case. I take it for granted that objects differing in size and in use, in material, colour, durability, and so on, differ also in dignity and in capacity for decoration. Architecture and furniture, for instance, religious monuments, tombs, and sepulchres, as contrasted with looking-glasses and vases, cabinets and chests, chairs and tables. So, again, very large objects and very small ones—paintings on the walls of cloisters and the halls of family houses, and the little fanciful decorations of fans and snuffboxes. For all these various uses of inventive design there seems to me in the very nature of things to be a certain suitableness, which we will call *propriety*. How large in treatment, how full in colour, how bold in relief, how simple or how detailed, how light and open, how slight and unlaboured, or the reverse—these are conditions or modes of treatment and design which have each their own opportunities. Each and all these methods or ways are suitable in certain cases. The most delightful impression we receive from the sight of good designs and from the study of various forms of art of good periods is the impression not only that a design is skilful and graceful, but of its absolute propriety. Much that is rude, poor, apparently careless, that we meet in art is admirable in its own time and place. It possesses this quality of propriety. The Greeks amongst the ancients, the Japanese amongst existing people, seem to me to have the gift of working in this way. Imitators or students all seem more or less to fall from their pre-eminence in this respect. Yet students of these schools have, I daresay, in many notable instances possessed superior knowledge, or some, perhaps greater skill. It would be hard to say that the artists of any period surpassed the science of Michael Angelo or the grace of Raffaelle, or that the porcelain painters of Dresden, or the French and Italian designers of the time of Martin and Watteau were not, in many ways, superior to the Japanese artists. Yet the Greeks treated sculpture and painting and the Japanese treat small decoration of all kinds with greater mastery, and with a more perfect perception of propriety. In one case it seems like a traditional gift to the race, and in the other a grand but a laborious accomplishment.

In order to get to the more immediate consideration of my present subject, I must make some attempt to analyse the sources of the satisfaction we derive from architecture—I mean good architecture, as distinct from the decorations for which architecture gives the opportunities. It must be remembered that the monuments of architecture which have delighted and astonished the world are storehouses of arts more delicate, beautiful, and impressive still—I mean painting and sculpture. The architecture of Greece, of Egypt, and of Assyria, as well as of the cathedrals, churches, and palaces of Italy and Northern Europe, have offered space and opportunity for the sculptures of Phidias and Praxiteles, and held once, no doubt, the paintings of Zeuxis and his scholars—though these have perished—and for the master efforts of a thousand artists. Of vast multitudes of these we know nothing—*Careut quia vate sacro.* No poet has handed their names down to posterity. What we *do* know, however, of the greatest of these we owe to the preservation of the architectural monuments that enshrine them. Cimabue and Giotto, Memmi, Gaddi, Angelico, Pinturicchio della Quescia, Da Vinci, Raffaelle, Michael Angelo, Peruzzi, and endless other names would be imperfectly known to us had we lost the buildings which contain their greatest works. The architecture which enshrines these delightful treasures would often be poor and without value if they had been destroyed. Nevertheless, architecture may be considered in its structural character, without reference to these beautiful additions, and it has, or ought to have, a certain dignity and impressiveness without them.

The component elements of architectural construction are very few and simple. The causes of the pleasure we derive from it are also sometimes most strange and contradictory. If we rob the Parthenon of its sculptured decorations, or, looking at it as a traveller would now see it, if we can deprive that intelligent and imaginative traveller—for Mr. Cook probably takes no others now to Athens—if we deprive the traveller of his memory on the subject of these decorations, and take away "Murray's Handbook," it would be difficult for him to say why he would be so much pleased by the Parthenon. The memory helps to fill up the gap in the imagination and the gaps in the sculpture—for much still remains there. But if nothing remained at all—how then? Well, he would see in the Parthenon certain exquisite accomplishments in the way of proportion, structure, and masonry. How exactly and wonderfully these structural principles are carried out, and how scientifically the lines of the floor and steps are laid, the columns proportioned, we may learn from the learned treatise of the accomplished architect Mr. Penrose. The columns of the front are set and inclined with a delicate succession from the outside; there is a bulge in their outlines scarcely perceptible in the floor-line, a convexity extremely slight. In the determination of the proportion of width to height there is a certain obedience to mathematical laws, and so on throughout. Every line of that typical building is, as we should say, "felt" throughout. If the student compares the sections of the flattened rolls that form the capitals of the Parthenon with those of similar capitals from Pæstum and elsewhere, a certain sense, a *feeling* for beauty, is everywhere discernible. The flatness of these sections in the centre; the continued variety of their curves; the place, the number, and the proximity to each other of the indented rings below, and the size and arrangement of the flutings; the absence of base—all these are details infinitely small, but they are of infinite importance to the effect on our eyes and imagination. It would take the traveller longer to understand these beauties than those of the frieze and metopes and the pediment if he could see, or, not seeing, if he is able to suggest them to his memory. Nevertheless, from all these minute excellencies we obtain elements of real pleasure and satisfaction. It is not to be supposed that ordinary sight-seers enter into these minutiæ. It is pretty certain that few of them do. But it is by no means to be denied that they would experience real pleasure from moving about the Parthenon, looking at it and becoming familiar with what is in itself charming and delightful, though wholly unanalysed and very imperfectly observed. Do we not feel, in a thousand instances, the charm of certain objects and certain people, though for the life of us we cannot properly account for it? The conversation of the learned or intelligent, and the mere presence and demeanour of some persons, spreads, as we are in the habit of saying, a charm around them. Well—good architecture spreads such a charm. If it is beautifully decorated, it does a great deal more, as the graciousness or brilliancy of charming people when they speak to us. But good architecture has beauties and charms of its own, apart from these additions, which are, in the more proper and true sense, beautiful works of art. We have spoken of the architecture of a building which we shall all easily select as a type of excellence. There are other productions of architecture, other results of mere structure, which have not these exactnesses, and yet impart immense pleasure. Nuremberg is a beautiful town. Rouen used to be another. In our own country, Oxford is considered a beautiful town; the High-street is pointed out as a beautiful street. How is this? Of the exactness of mathematical proportion, and of the subtlety of lines, curves, and so forth (which, in a building like the Panthenon, open up a sort of mine to a learned commentator), there is nothing whatever to be seen in such a crooked irregular street. With the exception of one single spire that goes to complete a long and varied line of buildings, and one tower that ends it, there is not a structure that claims in any sort of way the merits of perfection in architecture. The irregularity, the oddness, the disproportions in detail, the crookedness of the street and its component buildings, are reckoned as beauties. In fact, elements that taken separately constitute so many faults or solecisms, taken together make up an attractive whole.. On the other hand, the Classical revivals of the French Empire, and some of the modern Classical palaces and buildings of Germany, are considered, with all their observances of rule, as tame and uninteresting. To take another instance. Every one knows the peculiar scale of proportion on which Michael Angelo constructed the details of the famous Church of S. Peter at Rome. The columns and their bases and caps, the arches, architraves, mouldings, strings, and so forth, are all on such a scale that the same proportions are observed as if a building of what, for convenience, we may call usual or moderate dimensions in that Roman style had been enlarged. The figures of children that support the basins at the entrance, instead of having the proportions of Nature, are 9ft. high; doves that are sculptured amongst the decorations are as big as turkeys: all this as well when near the eye as elevated 200ft. or so. This particular feature of the proportions of S. Peter's has been criticised two ways. Michael Angelo's own feeling on the subject, it is right to say, has been transmitted to, or adopted by, most of his critics. The enormous extent of his entire structure is not appreciated at first sight, owing to the preservation of proportions to which the eye is accustomed, and the gradual perception by those that enter it of the size of the building has been looked upon as one of its leading perfections. On the other hand, intelligent critics maintain that great height and size in buildings are not features to be disguised, and that the changes of usual proportions in the constructive details that are so required should be observed: that as in Amiens Cathedral, or Cologne Cathedral, or Westminster Abbey, *height* is the great element of grandeur, maintained and impressed upon the beholder, so the height and the size of S. Peter's should be made to strike the eye of every one that enters, and to do it intentionally and at once. I do not venture to pronounce on such a divergence of opinion. But it will be allowed that the effect produced on the minds of men by details, proportions, or other elements purely structural, is very great. S. Peter's, as every one knows, is a storehouse of beautiful works in inlaid marble and stones, in mosaic painting and sculpture, in bronze and marble. All these beautiful details, however, are independent of what I am now considering, the powerful effects of pleasure or of disappointment by structural elements alone.

(*To be continued.*)

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* By J. Hungerford Pollen, Esq., M.A., of the South Kensington Museum. Read before the Associated Arts' Institute, Saturday, January 7, 1871.

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Holborn Valley Improvement.—The whole of the west wing of the Farringdon Market buildings is in course of demolition to make way for the new street from Ludgate-hill Circus to Holborn Circus. The street will be named S. Andrew's-street, after the patron saint of the parish.

New Offices for the City of London Union.—We have already announced in the Building News the result of the limited competition for a design for these buildingt. At the last meeting of the Board of Guardians, a report from the Building Committee was adopted. The report recommended that Mr. Hudson should be informed that his plans were approved as the best plans, and that he be employed to superintend the building in Bartholomew-close. That Mr. Chambers should be informed that he was entitled to the second premium for the second best plan, viz., £50, and that Mr. T. Chatfield Clarke be informed that he was entitled the third premium for the third best plan, viz., £30. It was also resolved to submit Mr. Hudson's plans to the Poor Law Board for approval, and to take the necessary steps for clearing the ground of the present buildings.

The Surveyor.

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ON THE PROPOSAL FOR MAKING OWNERS LIABLE TO THE PAYMENT OF A PROPORTION OF LOCAL TAXATION.

THE following paper was read at the ordinary general meeting of the Institution of Surveyors, on Monday last, by Edmund Rushworth, Member, Mr. Richard Hall, President, in the chair.

It appears by Parliamentary reports that the local rates and taxes, in the metropolis alone, amounted in the year 1867 to upwards of £3,000,000, and in England and Wales to £16,783,220. If any material alteration be made in the mode of levying this large amount, it is evident that existing arrangements between landlord and tenant would be seriously affected, and I am sure, therefore, I need not apologise for bringing the subject under your notice.

It has occurred to me that the most convenient method of doing this will be to call your attention, as briefly as I can, to some of the evidence given, and the arguments used with reference to the proposal for making the owner of house and land property pay a proportion of the local taxation now levied almost exclusively on the occupier.

This will, it seems to me, be a better way of raising a discussion on the general principles involved, than the reading of an essay to enunciate any personal opinion I may happen to hold on a special branch of the subject.

The success of the property tax (which is paid entirely by the owner, notwithstanding any previous arrangement that the occupier should pay all taxes and rates, whether parliamentary or parochial), probably encouraged Mr. Goschen to move for a Select Committee of the House of Commons, to inquire whether the burden of local taxation on land and buildings might not equitably be divided between the owner and the occupier.

The Select Committee of the House of Commons on Local Taxation, appointed in pursuance of Mr. Goschen's motion, reported on the 15th July, 1870 (*inter alia*):—

(*c*) "That in any reform in the existing system of local taxation, it is expedient to adjust the system of rating in such a manner that both owners and occupiers may be brought to feel an immediate interest in the increase or decrease of local expenditure, and in the administration of local affairs."

(*d*) "That it is expedient to make owners as well as occupiers directly liable for a certain proportion of the rates."

(*e*) "That subject to equitable arrangements as regards existing contracts, the rates should be collected, as at present, from the occupier (except in the case of small tenements, for which the landlord can now by law be rated), power being given to the occupier to deduct from his rent the proportion of the rates to which the owner may be made liable, provision being made to render persons having superior or intermediate interests liable to proportionate deductions from the rents received by them, as in the case of the income tax, with a like prohibition against agreements in contravention of the law."

(7) "That whilst it is necessary to make provision for limiting, as far as practicable, the disturbance of existing contracts, it would be on many grounds undesirable, and almost impracticable, to extend the exemption of property held under leases from the operation of the proposed changes until the expiration of such leases."

(9) "That the difficulties of the case would be equitably met by exempting the owners of property held under lease from the proposed division of rates for a period of three years, and by providing that after the expiration of that time, the occupiers of that property should be entitled, equally with all other occupiers, to deduct from the rent the proportionate part of the rates to which the owner may become liable, power being given to the owner at the same time to add to his rent a sum equivalent to the like proportionate part of the rates calculated on the average annual amount of the rates paid by the occupier during the three years above referred to."

The following are a few notes of the evidence taken before the Select Committee:—

Mr. Henry Arthur Hunt considered that "ground landlords had already paid their share of such local taxes as were then in existence in the diminished ground rent which they obtained, in consequence of the existence of such taxes having been used by the builder as his reason for not giving more ground rent, as the liability for payment of such rates would decrease the rent he could obtain for the building when erected.

The freeholder, in effect, said the value of the house is due to the site, and if there were no rates and taxes he would require more ground rent.

If the local taxation were taken off altogether the owner of the land would put it upon the price of the land, and the occupier would not be benefited."

Sir Sydney H. Waterlow (Chairman of "The Improved Industrial Dwellings Company") said, "there is no doubt that when a building lease is taken, the landlord does get less ground rent if the rates are very high."

Mr. Clare Sewell Read, M.P. (a Norfolk tenant farmer), said: "I believe that if the owner of land had to pay half the local rates he would be sure to recoup himself whenever there was a rearrangement of the rent. In all probability he would make it safe in this way. I believe the average rates are about 3s. 4d. in the pound in England and Wales, and if the owner were to pay half, viz., 1s. 8d., he would say to the occupier, in order to make himself safe, 'I shall charge you 2s.,' and he would get it on land—I do not say on houses.

The competition for land is such that the owner would be able, if there were an increase of rates, to throw it entirely upon the occupier.

The owner takes very little interest about the rates; he is not so much interested in them as the occupier.

I prefer charging half the rates upon the income tax to charging half the rates upon the 'owners' of land, as every one ought to contribute according to his ability, mortgagees included."

Mr. Elias Pitts Squarey (surveyor and a tenant farmer) said, "the poor rates on land are paid obviously by the tenant, but they are borne ultimately by the landlord.

I think the tenants would be pleased at a division of the rates, as in the event of increased expenditure by the county board the landlord would share the payment."

Mr. James Caird (a Tithe Commissioner) said: "In Scotland the poor rate is divided equally between the owner and occupier, and is collected one-half from each, and I think that the same system could be advantageously introduced into England, and would give the owner a greater interest in the rating."

He admitted that on a re-adjustment of rent of land in Scotland, the whole of the rates do practically go in diminution of rent.

Sir John Thwaites (Chairman of the Metropolitan Board of Works) considered that if the metropolis generally is benefited by better sewerage, purification of the Thames, embellishments such as the Thames embankment and improvements generally, it is a hard case to charge the occupier wholly with the expense because he happened to have agreed many years ago to pay every rate and tax, and therefore he thought that as the owner benefits in reversion by obtaining an increased rent, he should now bear part of the increased local taxation.

He would cast part of the local rates upon the ground landlord because he benefits in reversion, but admitted it would be unfair to tax "a tenant for life" of ground rents, who has no reversion.

He added that the occupier for the time being should pay half the local rates; and that the owner's half should be apportioned among the respective persons who make up the "owner," like the property tax, which reaches ground landlords and mortgagees.

Mr. Thomas Avery (late Mayor of Birmingham) said: "At the time of letting property on lease, the actual amount of rates is an element in the contract; they, therefore, come out of the owner's pocket, and the additions to those rates come out of the occupier's pocket till a re-adjustment takes place."

Mr. R. Dudley Baxter said: "The received doctrine in political economy was that the rates fell on the occupier. Adam Smith says that the building rent is the interest or profit of the capital expended in building the house, and is regulated by the ordinary interest of money.

The rates must necessarily fall upon the occupier, because, if they reduced the rate of profit below the average rate of profit in the trade, there would be a cessation of the supply of houses, and the demand would increase till the rents rose up to the point in which it was thrown upon the occupier."—*Vide* Adam Smith, McCulloch, and J. S. Mill.

He admitted, if farms were put to competition, the occupiers would bid with reference to the amount of rates to be paid by them, and, therefore, the rates would come out of the pocket of the owner.

He thought, if mortgagees should be charged a portion of the local rates, according to the amount of the interest received (as in the property tax), it would lead to their demanding a higher rate of interest.

Putting local rates upon the owner would, in the long run, lead to an increase of rates and an increase of the taxation upon land and real property.

He added that, as the rents of land are generally below the annual value, an attempt to cast half the local rates upon the owner would lead to his having his farms re-valued, which would tend to the disadvantage of the occupier instead of to his relief, as the increased rent would more than counterbalance the relief in rates.

The above quotations will serve to indicate the general character of the evidence given before the Select Committee.

It appears to me that the views of those who argue in favour of the proposal are:—

First. That it will give the owner a direct interest in local taxation, and induce him to attend the local boards.

Secondly. That, as respects improvement rates, occupiers should not bear the whole burden, since in yearly tenancies, or short leases, the owner benefits in a much greater degree than the occupier, who only enjoys the improvement for a limited time.

The opponents of the proposal maintain, on the contrary,

First. That the right of free contract between owner and occupier will be interfered with; and that there are very few owners or occupiers in the metropolis desirous of being fettered in the manner proposed.

Secondly. That if you force owners of London property to a frequent re-adjustment of rent, it must lead to their granting short leases, thereby discouraging outlay by occupiers; and in respect of premises used for trade, keeping the occupiers in constant uncertainty, to the manifest injury of their business.

Thirdly. That owners of property in London are generally capitalists, not living on the spot, and quite willing to leave occupiers (who have the local knowledge) to attend the boards, as at present.

Fourthly. That assuming that on re-letting, the owner succeeds in adding to the rent an annual sum equal to the burden cast upon him, the so-called "gross annual value" will be increased by that amount, and the imperial taxes, such as income-tax and house-tax, will be charged upon that increased "gross annual value," unless care is taken to provide for altering the present method of assessing it.

Fifthly. That if the owners are not able to cast the burden back upon the occupiers in the shape of increased rent, it follows that the owners will be mulcted in an increased property tax of about 2s. in the pound, whilst the fund-holder and other persons, not owners of land or houses, will go free.

Sixthly. That an increase of permanent burdens will diminish the number of years purchase for which the property will sell, for example:—

	£
A house is held for upwards of eighty years, at a ground rent of per annum	2
If the legislature charges the owner with half the local rates, say half of 4s. in the pound, and the gross annual value is assessed at £300, it follows that the property is burdened with an extra annual payment of 2s. in the pound, viz., .	30
Total	£32

It has thus lost one great attraction to the capitalist, who will probably offer one, or perhaps two, year's purchase less than he would have done had the burden remained at the almost nominal sum of £2, notwithstanding that he has the chance of adding that increased burden to the rent.

The questions, therefore, I would venture to submit to the meeting are:—

Firstly. What would be the general advantage gained by the proposed transfer of a proportion of the liability to local taxation from the occupier to the owner?

Secondly. What would be the effect of this transfer on the rental and saleable value of house and landed property?

Thirdly. Would not the advantages, if any, be more than counter-balanced by the great disturbance of existing arrangements between owner and occupier which in consequence must take place?

An animated discussion followed, and a vote of thanks was accorded to Mr. Rushworth for his paper.

ON THE RELATIONS OF GEOLOGY TO ARCHITECTURE. — CONSIDERATIONS ON THE SELECTION OF BUILDING SITES.*

By Professor D. T. Ansted.

(*Concluded from page* 35.)

IT is exceedingly important that the exact physical conditions of the formation of the alluvial beds of rivers should be clearly understood by practical men. It is by no means the case that the present bed of a river is the only part where loose and uncertain material exists, nor is it at all necessary to assume any change of level, still less any great convulsion of nature, to account for the phenomena. They may be studied in every valley where the stream is left to take its natural course; but in England, and in many other countries where land is valuable and cultivation carried on extensively, the rivers are never left to themselves, and therefore the changes that explain and illustrate these conditions are not perceived. In a natural state a river rarely follows the same course through its valley many seasons in succession. Either it chokes up its old bed and steps aside to form a new one, or, owing to a torrent, it cuts itself a new course altogether, and leaves the old bed dry. All our river beds have been formed in this way. It is not that the quantity of water brought down varies very much, but that the circumstances change, and new channels are cut, the deposits of course shifting. The whole width of the valley through which a river runs is of the same nature, and the deposits are due to the same cause. Hence the variety in the foundations in different parts of a valley far removed from the present course of the stream, which has not perhaps been allowed to shift for many centuries.

But in addition to ordinary alluvial bottoms resting on clay, limestone, or sandstone, as the case may be, and consisting of the usual admixture of sands, clays, and river gravels, are the instances in which the river valley has been ploughed out by the action of ice, and has received large deposits of boulders, boulder clay, and the usual accompaniments of fine and coarse sand and gravel. Gravels are frequently found at levels very much above the bottom of the valley, and they not unfrequently even cap the hills through which the river is cut. The same kinds of gravel often occupy the valleys themselves.

Excellent as gravel is as a foundation when in sufficient quantity and uniform in texture, it can hardly be trusted unless its history be known. The gravels called diluvial are often comparatively free from loose sands and clays, and are then excellent for every purpose required by the architect or engineer. They are sound, well drained, healthy, and generally yield water at a small depth. But it is not so with the gravels occasionally found with boulder clay, nor with ordinary river gravels, and thus, as I have already pointed out, the history of gravel is an important inquiry when it is proposed to construct buildings upon it.

Natural drainage is very important in all large buildings. Without this, even if the foundations are sound, moisture will rise up by capillary action through almost every variety of stone and brick, and will in time deface the building and increase the action of weather on the surface. Certain rocks drain naturally, and are safe. Others may be drained with little difficulty, and may be made safe. Others, again, will tax the ingenuity and experience of the most accomplished architect, and will, after all, be only partially cured. There cannot be a doubt that in this latter, and also in the second case, the constructor would be greatly assisted by knowing the nature of the enemy he has to deal with, and this can only be done by a knowledge of rocks generally and of the local geology.

In speaking of the applications of geology I have avoided the mention of particular rocks as much as possible, because it is not so much the rock as its condition that affects the practical man. I have known granites porous and absorbent limestones compact, and non-absorbent sandstones offering every possible variety in every respect, and even clays very different in different places. What is wanted is such a general acquaintance with the principles of stratification and the nature of rocks as shall enable the practical man to make the best use of the conditions he has to deal with. I cannot lay down rules that can be made use of without further trouble; I can only point out the key which will unlock the difficulty in each individual case, if it is applied properly and intelligently.

Water supply from springs either at or moderately near the surface is a very essential matter in the case of buildings intended as habitations removed to some distance from pure running water. But it is now well known that however pleasant clear spring water may be to the taste, it is capable of containing and does in certain cases contain injurious ingredients sufficient to render it a fatal poison. There can be no doubt that certain superficial deposits and certain rocks are liable to induce this state in the water, while others are not. It is evident that the causes of events of this kind should be known to the architect, and it is highly desirable that he should be acquainted with the theory of springs, at least of such as are likely to affect buildings. Absorbent gravels resting on non-absorbent rocks may be expected to introduce poison into water when the ground is liable to be covered with decomposing animal or vegetable matter, or with sewage, for the rain entering them cannot fail to carry in water loaded with as much of such impurities as it can contain. Such of them as are soluble in water will certainly therefore mix with it and render unwholesome all the water pumped from the bottom of such a deposit.

On the other hand, where water has a free exit from rocks, it is almost impossible that such injury can take place to any great extent. Land springs and artesian springs from basins are dangerous. Springs from hill sides or artesian springs reaching water tapped in its progress to an outlet are generally safe. How is it to be known what is the nature of the springs without some reference to the science of geology, and some knowledge of the laws of superposition of rocks?

The whole subject of the weathering of rocks deserves the careful study of all who have to deal with stone and brick. All material without exception is affected by exposure, but while some will remain almost unchanged, and even harden when left to the action of the air, other kinds will at once decompose and rot. It is not always the hardest that is the best. This is especially the case with flags or stones splitting with parallel faces. Many very good flagstones are formed by the exposure of quarried and squared blocks during one winter, and then in the following spring splitting the mass by wedges in the cracks indicated. If left longer they can no longer be split with advantage, and after a time it becomes impossible to split them at all. Something of this kind happens with all stones. After being quarried, stones are for some time in the state called green, and after exposure to a certain extent they are said to be seasoned. In the latter state they are regarded as fit for use, but after all it is doubtful without experience whether they will be permanently sound. It is evident that if we knew more of the history of stones we should be able to use them to better advantage.

The study of stones in the quarry, and a careful examination of the effects of weathering and disintegration by the action of rain and frost of the same stone in the immediate neighbourhood, whether naturally exposed or placed in buildings of any kind, combined with a knowledge of the chemical composition, the peculiarities of aggregation, and the natural history of the stone itself, and the beds with which it is associated, will very often suggest to the intelligent observer its probable weak points for the special service for which it is designed. There are accumulated stores of information of this kind that should be familiar to all who have to decide on the selection of a stone, and it should be remembered that stone is, in the nature of things, an altered form of a very miscellaneous deposit, and that without especial care in selection and placing it is next to impossible to secure a large quantity of perfectly even quality.

You will observe that I have included a great variety of subjects as embraced within the very important subject of building sites, but I trust you will not think that I have done so without sufficient reason. I am well aware that in modern constructions beds of concrete play an important part in forming artificial foundations, and are much trusted to in keeping out damp and preventing unhealthy miasma. I wish to point out that however useful such an avoidance of the difficulty may be, it should not be trusted to implicitly, and I think it would be easy to show that there are cases where the danger and mischief would only be postponed for a time by such contrivance, and would reappear and act with full force when by irregular pressure on a bad and shifting sub-soil the concrete becomes cracked and crushed long before the time has come when the building would begin to fail by reason of age and general wear.

I assume as entirely beyond discussion that in the exercise of his profession the architect desires only to do justice on the one hand to his own inventive genius, skill and reputation, on the other to the highest interests of his client. I have endeavoured to show that in order to do this he must inform himself concerning and be to some extent familiar with the principles and applications of the science of geology as now understood. He must from time to time call in the aid of this science to decide matters of vital importance, and he cannot do so properly without making them a subject of serious and special study. I have not entered into details, as they could hardly be fitly discussed in this place, but I have endeavoured to illustrate and explain the principles to which I think your attention as architects should be directed.

Since this memoir was in type, my attention has been directed by my friend Dr. Letheby to a pamphlet by Dr. Pettenkofer, in which attention is drawn to the great influence of subsoil and rock on certain diseases, especially cholera and typhus. Dr. Pettenkofer points out that in the case of Gibraltar and Malta, it was proved, by British statistical returns, that at a time when cholera was raging over a large area there were certain small localities that escaped. On investigation, it was found that whereas the subsoil to a great depth,—and in the case of Malta the rock—was eminently porous and permeable, the spots that escaped were situated on impermeable clays. There can now be no doubt that the health of a town site is greatly influenced by the condition of the rock and soil on which it is built, and that generally a moderately porous soil, admitting of the removal of moisture by drainage, is conducive to health, especially in a damp and comparatively cold climate like that of England, and also that with us, gravel and limestone, as subsoil and rock, are healthy as well as pleasant. But it is equally certain that where the underlying rock is deep and permeable, admitting of a considerable alteration of the level of the surface of permanent wetness—which is usually found to exist at some depth, however, under such circumstances, but which varies with the season—the result may be different, and it may require both knowledge and judgment to decide as to the relative values of sites, even with regard to water only. It is also true that wherever there is a great collection of human beings, living over a permeable soil and rock, the effect of the accumulation of refuse and sewage cannot but be felt in course of time. The water percolating from the surface will carry down organic matter, and thus in time it will inevitably make itself felt, by generating unhealthy and miasmatic vapours, occasionally reaching the surface. But there is another question to be considered, which in warm and dry climates rises into great importance, and with regard to which the observations of Dr. Pettenkofer are very suggestive. All rocks are capable of absorbing, and therefore also of containing, a certain quantity of atmospheric air, either in its normal state, or replaced by other gases. No doubt a certain change in the constitution of the gases absorbed may take place, in consequence of the connection well known to take place in porous and spongy solids when mixed gases pass through them. The quantity of air or gases contained in all rocks must vary, and must be affected by changes of weather. During dry and hot weather, large quantities are given off, and during colder weather re-absorbed. In rocks, then, that contain much air, either in consequence of their great absorbing power or other laws, when there has been received into the body of the rock, by percolation from above, any quantity of organic matter, and this organic matter has become putrid, the gases given off during hot summer days are liable to become dangerous miasma, and when cholera and fever are prevalent are especially liable to incur infection. I cannot but attribute to this cause the extremely bad sanitary state of some districts in the Mediterranean, healthy enough so long as there is rain, but poisonous in the dry autumn, and in these cases I can easily understand that the intervention of even a small thin band of clay may be a source of safety, and the more so the nearer it is to the surface.

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* Read before the Royal Institute of British Architects.

I need offer no apology in pointing out these facts and inferences in a memoir on the subject of building sites, and of which the application of geology to architecture is the professed subject. Sanitary considerations connected with and arising out of topographical and geological positions can never be dissociated from the practice of architecture, and I am sure you will agree with me that all knowledge that can help to a conclusion in such matters is not only desirable, but ought to be considered indispensable to the architect.

PEMBROKE COLLEGE, CAMBRIDGE.—BUILDERS AND ARCHITECTS.

THE attention of all builders who may be about to tender for these works is directed to the following conditions which are to form a part of the contract:—

The decision of the architect to be final and binding on all matters relating to the meaning and intent of the drawing and specification, as to mode of construction and quality of materials, as to reinstatement of defective work, as to the date of completion, and as to the time and amounts of all payments to the contractor.

Should any difference arise in any other matter than as above, a reference to be made to an architect to be nominated by the President of the Royal Institute of British Architects for the time being.

The Builders' Society have lately protested against similar conditions proposed for the New Law Courts, and the Chief Commissioner of Works has altered them, and it is hoped that all builders will refuse to tender under such conditions in future. It is plain that in the above conditions the power of the architect is absolute in everything, and that the reference suggested is an illusion, as there would be no question open for arbitration. Similar conditions have been stigmatized by the judges in a recent case, Jones v. St. John's College, as one-sided, unjust, and improper for any builder to subscribe.

XYLONITE.

SOME time back we (*English Mechanic*) gave a short account of a substance first exhibited at the Exhibition of 1862 under the name of Parkesine; but as this material has been much improved, and is now largely manufactured for commercial purposes, it will probably interest our readers if we give some further information concerning its preparation and the various uses to which it is found applicable.

The material, then, which was formerly known as Parkesine, from its inventor, a Mr. Parkes, of Birmingham, and which has been renamed xylonite, from the Greek *xulon*, wood, is manufactured from wood or woody fibres, which are converted by the action of a mixture of sulphuric and nitric acids into a substance called xyloidine. This xyloidine, by means of patented machinery and solvents, is reduced to a sort of collodion, which forms a base for further operations, and the manufacture of articles almost too numerous to mention. The waste stuff from cotton and flax mills is the material generally employed in the preparation of xylonite, but wood, woody fibre, fibre-producing grasses, old rags, old rope, starch, and "half-stuff" of the paper-makers are of nearly equal utility. These substances must be first freed from all foreign and useless matter by boiling with alkali or soap and water; they are then well washed and dried, leaving nothing but the almost pure fibre for after treatment. A certain quantity of this fibre is then immersed in a mixture of four parts by weight of sulphuric acid, one of nitric acid (both concentrated), and one of water, previously prepared and allowed to cool to 70° or 80° Fahr., where it remains for periods varying from one to twenty minutes according to the degree of solubility desired. After removal from the bath, the liquid is drained or pressed out as expeditiously as possible, and the fibre washed in repeated changes of water until that liquid no longer affects a test-paper, when if the fibre, which is now called xyloidine, retains any colouring matter, it may be submitted to the action of the ordinary bleaching agents without injury to its chemical condition. It is then dried at a low temperature, or preferably by pressure, and is ready for the process of dissolving. So far the operations are similar to those adopted in the preparation of collodion for photographic purposes, but the solvents employed in the manufacture of that substance are too expensive for use in the production of xylonite, and recourse has been had to solvents, either fixed or volatile, or mixtures of both, by means of which the condition of the xylonite may be varied from the flexibility of morocco leather to the hardness of ivory or stone. The volatile solvents generally employed are wood-spirit, mineral naphtha, alcohol, aldehyde, benzole, and some other of the hydrocarbons; whilst the fixed solvents consist of linseed, castor, and other vegetable oils, with the addition of camphor. The employment of these fixed or non-volatile oils is one of the more recent improvements, avoiding the inconvenience previously caused by the contraction of the material, and the loss by evaporation of the volatile solvents. The castor-oil solvent, which is used in the production of flexible xylonite, is prepared by heating two parts of the oil to between 250° and 300° Fahr., and dissolving therein one part of camphor. While in the heated state, the xyloidine is added, and in the proportion of one part to five of the solvent, stirring is sufficient to reduce the materials to a thick paste; but for the purpose of blending the mixture more thoroughly it is ground between rollers, and is afterwards forced by means of a powerful press through the interstices of a finely-woven wire sieve, thereby removing any impurities or undissolved particles of xyloidine. After passing through the sieve, it is mixed with the requisite quantity of oil and the particular pigment necessary to make it suitable for the purpose for which it is intended, and taken to a heated masticator, where it is kneaded to the desired consistency, and is then rolled into sheets by a powerful calendering machine, after which these sheets are submitted to a heat of between 100° and 120° Fahr. for a period varying from two weeks to a month. If the xylonite is required to become hard during this seasoning process, it is necessary to use an oxidized oil, such as linseed-oil, in its preparation, whereas the flexible kinds are produced by the employment of cotton-seed or castor-oil.

It will be seen that any tint can be given to this material by incorporating with it a pigment of the desired colour; but in preparing non-actinic sheets for photographic purposes semi-transparent colours only are used, such as will arrest the passage of chemical rays and furnish a material for the window of the dark room in place of the ordinary yellow glass. Indeed, there is little doubt that this substance will be largely employed in the manufacture of the apparatus employed in the art of photography—*e.g.*, for baths, dippers, and dishes for development, &c.; and Mr. D. Spill, in a paper read before the Photographic Society, thinks he may succeed in adapting it as a substitute for glass in taking negatives. It is also thought that by its means bisulphide of carbon may be converted into a viscid, colourless, transparent liquid without material dilution or reduction of its refractive index, which, if accomplished, would render the bisulphide of great value to opticians for use in compound lenses and prisms. One of the applications of xylonite consists in waterproofing fabrics, for which purpose it is applied in a semi-fluid condition with an ordinary india-rubber spreading machine, or sheets can be made to adhere to the substance to be coated by passing both through the rollers of a calendering press. It can be turned in a lathe, or wrought by the brass-finisher's or cabinet-maker's tools, embossed or moulded by heat and pressure, and is capable of taking a high degree of polish. It is unaffected in the finished state by heat, water, grease, or atmospheric influences; and has already been applied to various purposes by the Xylonite Company (who possess all the patent rights), such, *e.g.*, as the insulation and protection of telegraph wire, making artificial leather, writing tablets, bearings for machinery, friction and gear wheels, organ and pianoforte keys, billiard balls, umbrella and walking-stick handles, &c.

The xyloidine produced in the first stage of the manufacture is in reality a gun-cotton, but of the lowest possible degree of nitration, burning very slowly, and leaving a considerable amount of carbonaceous residue. As previously remarked, the articles of commerce to which this prepara- is applicable are already too numerous to mention, and there can be little doubt, we think, taking into consideration the great improvements introduced into its manufacture of late years, that it will ultimately become one of the most useful materials with which we are acquainted.

Building Intelligence.

CHURCHES AND CHAPELS.

NEW REREDOS AT S. ASAPH CATHEDRAL.—The erection of a magnificent reredos, presented by Mrs. Hesketh, of Gwrych Castle, has now fully completed the ornamentation of the choir and chancel of S. Asaph's Cathedral. The design is by Mr. G. Gilbert Scott, R.A., and the sculpturing by Mr. Earp, of London. It consists of an entablature in alabaster, with arcading on either side. The sculpturing which adorns the entablature represents the procession to the place of crucifixion. In the centre, which is surmounted by a dome terminating upwards in a pinnacle of rich tabernacle work, is the figure of Christ bearing the cross; to the right are Roman soldiers preceding, and on the left the three Marys and several of the disciples following. All these figures are in *alto relievo*, appearing at first sight to be altogether detached from the background; but behind the effigy of the Saviour a Roman centurian on horseback is delineated in *bas relief.* The arcading is of a handsomely decorated Gothic style, the massive capitals being supported on polished marble pillars. The cost of the reredos is about £600.

SOUTHPORT.—The new church of All Saints, Southport, was opened on Thursday, the 5th inst. The edifice is in the Early Decorated style of architecture, and the dimensions are as follows:—Length, 73ft. and width 42ft.; chancel, 25ft. by 20ft.; height to the ceiling line, about 34ft.; and belfry with spirelet, height 90ft. All the windows are in tracery. The exterior is faced with stone throughout. The church is intended in the first instance to seat 500 worshippers. Mr. J. Sidebotham, of Lord-street, is the architect, and Messrs. Wishart & Irving the contractors.

WARRINGTON, LANCASHIRE.—The new Baptist chapel in Legh-street was opened on January 5. The site of the former chapel in Bewsey-street, having been bought by the Great Northern and Midland Railway Companies for the use of their new line from Liverpool to Manchester, it necessitated a new one being built, and as the whole of the material remained in the hands of the trustees, the new one has, to a great extent, been built with it. The architect, however, has remodelled the front entirely; it is now of pressed brickwork, with Cefn stone jambs, arches, and labels, to windows and doors; pillars of red Mansfield stone and red granite, with carved foliated caps. The entrance door has over it a carved panel with the vine, passion-flower, and wheat, interwoven with a ribbon, which bears the name of the chapel. The carving has been executed by Mr. Bate, of Manchester; the building by Messrs. Gibson & Son, from the designs and under the superintendence of the architect, Mr. William Owen, jun., of Warrington.

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INCORPORATED CHURCH BUILDING SOCIETY.—This society held its usual monthly meeting on Monday last, at the society's house, 7, Whitehall, S.W., the Earl of Romney in the chair. Grants of money were made in aid of the following objects:—Building new churches at Eley, in the parish of Caerau, near Cardiff, and Newark St. Leonard's, Notts; enlarging or otherwise increasing the accommodation in the churches at Canterbury S. George; Catterick, Yorkshire; and Dunton, near Winslow, Bucks; under very urgent circumstances additional grants were made towards building a church at Nottingham S. Andrew's, and from the special fund towards building a mission church at Rhwsfa, in the parish of Nantmel, Radnorshire. A grant was also made from the School-church and Mission-house Fund towards building a school-church at Harrowbarrow, in the parish of Calstock, Cornwall. The society likewise accepted the trust of sums of money as repair funds for the churches at Burton-in-Lonsdale, Yorkshire, and South Kensington S. Stephen's, Middlesex.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—H. J. P., S H. & Co., H. J. F. K., W. S., W. B., P. W., S. & Sons, J. H. T., W. W., H. J., T. P., P. Bros., A. H., J. H., W. B., Enquirer, W. E. L., S. E. B., W. & B.

J. L. T.—Ask through "Intercommunication."

H. K. Gribble.—Sketches returned.

D. Grant.—Sketch returned.

P. Auld.—The addition came to hand.

Geo. Holford.—The sedilia will appear. Please send a few words of description.

Thomas Jeffrey.—Sketch long since returned.

C. H. T.—Let us finish one sketch-book before we talk about another. When the first is finished and the prizes awarded and distributed, we shall have another suggestion to make.

G. S. A.—Covers 2s. each; volumes bound for 3s. 6d.

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Correspondence.

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ALBERT DÜRER.

(*To the Editor of the* Building News.)

Sir,—I am very glad to learn that you intend to reproduce by our photo-lithography the works of Albert Dürer. I have read much about the great German engraver, and have seen a few of his wonderful works, and should very much like to possess some of them. But next to possessing the engravings themselves, which are now very rare, and consequently very valuable, I should esteem it a great privilege to possess exact reproductions of them, and now hope to do so through the Building News. I shall look forth with great interest for the publication of the series you have promised, and I should think thousands of others will do the same, considering the fame of the artist, and the value of his productions.—I am, &c.,

A Country Subscriber.

UNGRACIOUS.

Sir,—In conning over late numbers of your journal I found a great many queries unanswered in "Intercommunication"; I send replies to some of them. The notice I lately sent you of Elveden was made extensive use of by the press, metropolitan and provincial, but none had the grace to say where they got the information. Amongst the offenders the *Builder* is prominent. —I am &c., P. E. Masey.

24, Old Bond-street, Jan. 17.

PAYMENT OF ARCHITECTS BY PERCENTAGE.

Sir,—In the Building News of December 30, there was a letter on the subject of payment of architects by percentage, from Mr. E. L. Garbett, in which the following passage occurred:—"Your correspondent talks of the 'loss and degradation it involves,' and I have just the same language in a letter received from Mr. Geo. Edmund Street some years ago. Of course I immediately asked, as I now must again, 'Degradation? By whom? Who, then, degraded you, sir? Who requires you to take percentage on an outlay?' No answer have I got from my friend to this day. Now I publicly challenge these two men who write, one publicly and the other to me, that they have been 'degraded,' to name their degraders."

When I read this passage I was, I confess, considerably astonished. I never to my knowledge saw Mr. Garbett, and I certainly have not the honour of his acquaintance. I remember some years ago that he did write to me and I to him on the subject of the payment of architects. I feel perfectly certain that I never said or implied that I felt myself in the least degree degraded by accepting the established custom, for I have never felt anything of the sort. I wrote at once, therefore, to ask Mr. Garbett to be so good as to send me a copy of the letter from which he quoted. In reply, he tells me that he will send it whenever he can "turn it up;" and that he has not seen it for two years, but knows "that its expressions resemble Mr. Aitchison's"!

I have waited since the receipt of this reply (January 5th) to give Mr. Garbett a fair chance of finding my letter, and substantiating his statement. As, however, he has not done so, I am obliged, in justice to myself, to say that I feel sure he has misquoted me altogether. I *may* have said that the payment by percentage is an absurd custom, because good work and bad work, easy work and troublesome work, are all paid for at the same indiscriminating rate. But absurd rules do not seem to me to be of necessity degrading, and I have never suspected myself of being degraded by acting on this particular rule, and I never, to the best of my belief, received any letter from Mr. Garbett asking the question which he says he at once asked on this point.

In conclusion, I may say that I think the publication of paragraphs from private letters is not a custom which can be justified, even where the letters themselves are really and fairly quoted; and that Mr. Garbett's scheme for charging 10s. a square for the floors of every house he designs is considerably more absurd than, and leaves just as much opening for dishonourable practice as, the system of percentage on cost.—I am, &c. George Edmund Street.

Jan. 17, 1871.

KITCHEN BOILERS AGAIN.

Sir,—So frequent have been the accidents caused by the exploding of kitchen boilers, and so numerous the remedies advocated in the *Times* and other papers to prevent such a serious catastrophe, that I, for one, feel quite at a loss which plan to adopt to ensure perfect safety. One gentleman says:—Put a gas stove close to the cold-water cistern, to keep it from freezing, the heat to be regulated by the severity of the frost. Another says: Connect a large waste pipe to the bottom of main cistern, to enable you, at the first sign of a pipe giving way by frost, to let the whole of the water out of the house; I don't see how this will prevent the boiler exploding, if the pipes connecting the boiler and circulating cisterns are previously full of water, and frozen up. Another plan advised is to wrap the whole of the pipes and cisterns with felt; this appears to me to be the most sensible, especially where the pipes and cisterns are placed near the external walls, but, is the wrapping of pipes with felt absolutely necessary when the pipes are 5ft. from the external wall?

On my works, two practically experienced tradesmen are divided in opinion on the matter; therefore, to enable those who really do know to give me and others the benefit of their practical knowledge, I will state the different positions occupied by the main cistern, circulating cisterns, and kitchen boiler. The main cistern is of slate and fixed in the roof, directly over W.Cs. The circulating cisterns are over the bath, about 18ft. distant and 3ft. below main cistern. The kitchen boiler at back of kitchen range (which is fixed in an external wall), is about 45ft. from circulating cisterns, and 18ft. below; the pipes connecting those two points are quite 5ft. from any exterior face. The person connected with the kitchen range and boiler contends that it will not be safe unless the pipes and cisterns are wrapped with two thicknesses of felt throughout, saying that the cold from the brick wall will very materially affect the lead pipes in frosty weather. The plumber says that to wrap the pipes with felt would be a waste of time and felt, as they are carried along an internal wall, 25ft. of which is really in the kitchen, where he contends it will generally be moderately warm. He advises the hot-water cistern to be lined with felt, not to keep the cistern hot, but to prevent the heat from the cistern damaging the wood lining around cistern. For the benefit of myself, and I have no doubt others, I kindly solicit the experienced opinions of your numerous readers.—I am, &c.,

J. W. Randle.

TENDERING FOR WEDNESBURY TOWN-HALL

Sir,—Referring again to this matter, your readers will remember that both Wednesbury architects received the first and second premiums in competition of over twenty. Notwithstanding the express stipulation by the Board that the cost was not to exceed £2,000, I find on Monday last the Board decided to accept the tender of Mr. Moore at £2,325, after the same had been cut down to the extent of £600 without violating the integrity of the building and affecting its utility. Comment further on this competition would be useless; when will this jobbery end?—I am, Sir, &c. Observer.

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Intercommunication.

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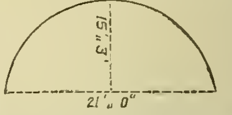
QUESTIONS.

[2097] TUNNEL EXCAVATIONS.—Will some obliging reader furnish me with necessary information for calculating contents of tunnel where the chord and versed sine alone are given? For instance, what is the area of a tunnel or segment of a circle whose chord is 21ft., and height or versed sine 15ft. 3in.; also if in calculating for miners' measurement the plan area of tunnel is taken, or is any allowance made for excavation necessary to build brick arch beyond the height given, 15ft. 3in.?—Surveyor.



[2098] SPEAKING TUBES.—I want to use a speaking tube between a mansion and the stables belonging thereto; the distance is about four hundred yards; the course of the tube would be nearly straight, so that angles and sharp curves would be avoided. If some one who has had experience in long tubes could give me a little information I would greatly oblige.—H. H.

[2099] REMOUNTING PHOTOGRAPHS.—I have a fine set of architectural photographs, but the boards they are mounted on have got soiled. Can any one tell me how to remove these photos without damage?—George A. Noble.

[2100] TAYLOR'S PATENT TILING.—I should be glad to have the opinion of one who has used the above as to the capabilities in keeping out wet and withstanding high winds. I used them on one occasion and found they did neither satisfactorily, but was told by the manufacturers that it was owing to their being improperly laid.—Tegula.

[2101] QUICK DRYING PAINT.—I should be glad to obtain any information as to the efficacy and durability of the quick drying paint lately advertised.—Z.

[2102] PIPES AND SMOKE FLUES.—Having heard a variety of statements as to the use of pipes and smoke flues, I am desirous of obtaining information from some one having practical experience in the use thereof. Are they liable to break from unequal expansion with the surrounding brickwork? If there is no objection to their use, what is the best description for the purpose—fireclay or glazed sanitary ware?—Z.

[2103] PLUGS FOR KITCHEN BOILERS.—Do the fusible plugs for kitchen boilers really answer in preventing explosion? or is the cause of accidents to be attributed to undue pressure on the boiler from the frozen pipes not leaving room for expansion?—Z.

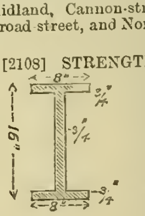
[2104] TEMPERATURE OF DAIRIES.—Will any subscriber oblige by informing me what means are employed in a good Cheshire or other dairy for regulating and maintaining the necessary temperature, and what generally are the principal points sought for, and how such are obtained in the construction of a large cheese dairy?—W. W.

[2105] HEATING ENTRANCE HALL.—Will any of your readers kindly inform me the best method of heating an entrance hall with hot air? A china pantry and larder occupy the space below the hall on the basement.—A. L.

[2106] THICKNESS OF WALLS OF CHURCH TOWERS.—In Gwilt, page 961, it says "The mean internal area should be half the external area." Does this mean that the product of the outside dimensions should be twice the product of the internal dimensions, or that the area of the floor should be half the area of the walls?—Puzzled.

[2107.]—PLANS OF STATIONS.—Would some one kindly inform me where I could procure plans and geometrical elevations of the following railway stations:—Midland, Cannon-street, Charing Cross, Great Western, Broad-street, and North Western?—Wm. Read.

[2108] STRENGTH OF GIRDER.—Would some able reader kindly give the method of calculating the safe load that may be applied to a cast-iron girder 20ft. long, of the following section, and what allowance should be made if the web be openwork? Also the method of calculating the strain on web of wrought-iron girders?—W. F. T.



REPLIES.

[1996] UNANSWERED QUERY.—The lead used by glaziers for church windows has been used for the purpose, also clay, but if great accuracy is required there is nothing equal to careful sketching and measurement.—P. E. M.

[2015] PLANS OF COTTAGES.—Plans of cottages, with specifications, &c., are published by the Society for Improving the Condition of the Labouring Classes, 21, Exeter Hall, Strand.—P. E. M.

[2027] SCAGLIOLI.—Most works on architecture and building give description of this kind of work, for instance Nicholson's "Encyclopædia of Architecture," and Gwilt's ditto.—P. E. M.

[2044] CHANCEL WALL AND ARCH.—I am not aware of any law having been laid down on this point, but I should say that the duty of repairing the chancel arch rested with those who repaired the church. The wall belongs to the nave; it finishes the nave roof at a higher level than the chancel.—P. E. M.

[2045] CHURCH BUILDING.—It would be very unusual to have two arches at entrance of transept, and awkward, as the pier would stand in the gangway. The usual plan is to have one arch, making the last bay of nave coincide with the width of transept by widening the arch and its pier. Openings, more or less corresponding with clerestory windows, are sometimes left between transept and nave.—P. E. M.

[2062] ORIGIN OF PULPITS.—As the question of "S. H." refers to mediæval usage, and has not been completely answered, I beg to say that though pulpits exist in abbey refectories of date as early as the thirteenth century, they did not make their appearance in churches till the fifteenth century, and then were not common. Under the Reformation all churches were required to have them, hence so many of Jacobean date.—P. E. M.

[2068] SEVENTEENTH AND EIGHTEENTH CENTURY ARCHITECTURE.—Richardson's.—P. E. M.

[2075.]—TO PRACTICAL CLERKS OF WORKS.—In reply to "Old Foreman's" questions of December 23, as to walls built 2ft. 9in. thick, with 7in. of brickwork inside, I should think that he must be well aware that brickwork does not settle near so much as flintwork, especially if flints are small or rustic faced. The following I have found to be an average settling of brick and flintwork, taking the building to be of 50ft. in height. In every 1 ft. of [illegible] work the settling will be 1in., and of flintwork, with rustic or rubble-faced, will be 1¼in., if built in dry weather; consequently if stone quoins are not well tied in position they will be a little displaced by the outward tendency of flintwork. Probably "Old Foreman" is deficient of iron ties or bond of any kind, or he may not be seeking information but confirmatory evidence as to his own views, having a yoke of some inexperienced clerk of works cast on his shoulders, which I regret to say, from experience, is too often the case. Many rise to that position that can neither tell Portland stone from York, or a kiln brick from a burnt one, or Memel timber from Swede, to the great annoyance of foreman and loss to builder, besides a disgrace to surveyor or architect. This needs a thorough determination by architects or combination of builders throughout England to root them out. No doubt many of them may do well in their places as copying clerks in an architect's office, being able to use the pen neatly and quickly, but at all practical points they are entirely [illegible], yet treat those from whom they may glean with contempt. I apologise for thus intruding.—X. Y. Z.

[2077] FONTS—LEICESTERSHIRE, YORKSHIRE.—The font in Barrow Church, Leicestershire, is of thirteenth century date. That of Patrington, Yorkshire, fourteenth century. It is very unlikely there are two good Perpendicular fonts in Leicestershire.—P. E. M.

[2083] HIGGS' PROCESS.—This process of treating sewage is by adding milk of lime to the sewage as it enters the subsiding tanks, the lime precipitating all the suspended and part of the soluble matter. The solids thus obtained [illegible] formerly made into bricks, dried and sold to the [illegible] for manure. No town that I am aware of now manufactures these bricks, but this system of deodorising is [illegible] on at works of which I have the management, and I should be glad to give "G. W. M." an order to view if he will favour me with his card.—THOS. W. GRINDLE, Borough Engineer's Office, Hertford.

[2087] ASPHALTE IN CHEAPSIDE.—The asphalte used is that of the Val de Travers, and is said to be better than the Seyssel, as containing more bitumen. There is nothing added to the natural material. It is simply ground, heated and applied.—P. E. M.

[2089.] — QUANTITIES. — In answer to "Justitia's" interrogatory last week, I beg to say that, as far as my experience goes, in connection with parish and corporation contracts, it is the custom of quantity surveyors to charge their commission (1, 1½, or 2 per cent., according to circumstances) to the successful competitors only; but, I am bound to state that not one penny comes out of his pocket, as the whole amount is always added to the tender (in one contract no less a sum than £600 was thus imposed on the ratepayers of the district), which is a most iniquitous thing, I consider, because the surveyors in the pay of the parishioners ought to prepare the bills of quantities themselves. Respecting private contracts, where no permanent engagement is given to architects or surveyors, although the treatment of the quantity surveyor's charges is precisely the same as in parish contracts, there are certainly some justifiable grounds for making the proprietor or owner of the contemplated works bear the charges for quantities; but, at the same time, I cannot refrain from saying that the general rates of charges are excessive in the extreme, and ought to be greatly reduced. In no case should several quantity surveyors be permitted to supply bills for the same job; such a practice is fraught with mischief, and is injurious alike to owners and contractors. —J. M. L., Battersea.

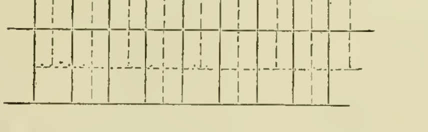
[2089] QUANTITIES.—In answer to "Justitia's" question I would answer 1st, that it is not a custom with many architects or surveyors to charge their bills of quantities against the competing contractors, and in the few cases where it is the rule the money is refunded to all those who lodge tenders. 2nd, in cases where the contractors do pay for the quantities and do not get their money back the charge is understood to cover the surveyor's full commission, and the client will have nothing further to pay, unless he is foolish enough to pay twice for the same thing, seeing he indirectly pays the first, as the contractor must add whatever sum he has to pay for quantities to his estimate. 3rd, the fairest way is to give the quantities free to the competing contractors, as they could not be expected to pay for quantities of work out of which they have no return. It would be a more reasonable scheme to propose paying all contractors who put themselves to the trouble of estimating for new work, seeing that to the unsuccessful it is labour (which is money) lost.—I. M. A.

[2089] QUANTITIES.—Customs vary with localities, and "Justitia" must at least name to what portion of England his queries apply before they can be answered satisfactorily. In many places contractors positively refuse to submit tenders unless quantities are supplied to them free of charge, and in others they have either to take their own quantities, or employ a surveyor to do so entirely at their own cost. It may be taken for granted that in the majority of localities the employer is the one who does pay, directly or indirectly, and who besides has such a right to the privilege? Quantities and contracting are absolutely inseparable; and, as the former is as essential to a building as the roof, should be paid for in like manner and by the same liquidator.—F.

[2091] CHURCH SITTINGS.—Seats or pews should be from 30in. to 33in. wide in the clear; seats from 12in. to 14in. in width, and from 18in. to 20in. of the seat should be apportioned to each adult sitter; the maximum or minimum being governed or regulated by the amount of available space and money or other special restrictions or requirements.—F.

[2091] CHURCH SITTINGS.—According to the rules of the Incorporated Church Building Society, and generally followed, the width allowed to each person is 20in., the backs of seats being from 2ft. 8in. to 3ft. apart from centre to centre.—P. E. M.

[2092] BOND IN BRICKWORK. — The best way to bond 18in. work in old English would be thus:



the dotted lines show upper course.—P. E. M.

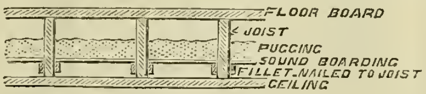
[2094.]—MEASURING STRING-BOARDS TO STAIRS. —"A Joiner's Apprentice" will find that a good method of doing this is to take the straight and circular wall strings separately, to their extreme length and width, and collect the cuttings, housings, and all other extras as they appear. The above is the method recommended in "Atchley's Price Book."—O. B. Q.

[2095] PREVENTING SOUND TRAVELLING FROM FLOOR TO FLOOR.—Use lime rubbish instead of sawdust. —P. E. M.

[2095.] — PREVENTING SOUND TRAVELLING. FROM FLOOR TO FLOOR.—Fillets should be nailed about three inches down the joists to receive boarding, covered with one inch of coarse mortar. This should be done when the building is covered in, and remain some time to dry before the flooring boards are laid.—PUGGING.

[2095.] — PREVENTING SOUND TRAVELLING FROM FLOOR TO FLOOR.—I have found it very effectual to lath under the joists, on a pricking coat of lime and hair, and then put on ceiling joists, say 3in. by 2in., to which the plaster or boarded ceiling may be nailed. This not only keeps out the sound, but allows the timbers to be well ventilated, which is the only way to keep away dry rot.— F. ROGERS.

[2095] PREVENTING SOUND TRAVELLING FROM FLOOR TO FLOOR.—Pugging (coarse mortar) placed on sound boarding, thus,



is generally considered preventative.—F.

WATER SUPPLY AND SANITARY MATTERS.

DUNDEE.—A special meeting of the Dundee Water Commissioners was held on Monday evening last to consider the financial questions connected with the new water scheme. The Convener of the Works Committee explained that, calculating upon an increased rental of £16,000 yearly, and carrying out the works essential for the new scheme, and leaving the other portions unexecuted until the town grows larger, the scheme could be carried out without any increase on the present rates. The opinion was expressed during the discussion that as the Commissioners had obtained supplementary sources of supply for three years, and that the time might be further extended by agreement, there was not now such pressure upon them to enter upon the new scheme, and that, therefore, time should be taken to consider it in all its bearings. The matter is to be brought before the townspeople.

LAND AND BUILDING SOCIETIES.

ST. PHILIP'S BUILDING SOCIETY.—On Tuesday evening the 21st annual meeting in connection with the above-named society was held at Birmingham. The secretary (Mr. William Worrall) read the annual report, which, having traced the origin of the society, and explained the way in which its business is conducted, claimed it to have been eminently useful to the class for whose benefit it was originally established, and pointed out the desirability on the part of the members of doing what they could to increase its strength, of maintaining its reputation, and of making it beneficial to the working classes. Up to the end of last year 762 shares had been taken, the receipts amounted to £4,158, the profits divided to £8,861, and the reserve fund to £1410.

TOTNES BUILDING COMPANY (LIMITED).—The annual general meeting of this company was held recently, and a dividend of 2½ per cent. was declared.

Our Office Table.

THE PROPOSED NEW ENGINEERING COLLEGE.—A deputation from University College, London, consisting of Mr. George Grote, the president, the Hon. George Denman, M.P., Mr. Julian Goldsmid, M.P., and Dr. Storrar, members of the Council; Professor Fuller, C.E., Professor Williamson, F.R.S., and Mr. J. Robson, the secretary, has waited upon the Duke of Argyll, at the India-office, to present a memorial from the Council and the Senate of the College, on the subject of the proposed institution of a new Engineering College for the Indian Service. The interview with his grace lasted upwards of an hour. The memorialists consider that the deficiency in the present system has arisen, not from any defect in the existing places of education, but from the injudicious system of examinations hitherto pursued, and from a want of sufficient inducements to well-qualified men to enter on the career proposed to them. The memorialists assume that the latter cause is recognised by the Government, for it is understood that it is in contemplation to augment considerably the salary upon which a civil engineer in the service of the Indian Government will hereafter commence his work. The memorialists believe the proposed college will be prejudicial to the public service by narrowing the field for the selection of candidates, and by limiting their means of obtaining the requisite instruction. They submit that the working of Government Colleges has not been such as to recommend the the creation of a new Government College, having practically the monopoly of appointments, and protected from competition. They suggest that such a step is at variance with the plan for throwing open to all her Majesty's subjects the opportunity of gaining Government appointments.

STREET TRAMWAYS.—Mr. John Noble recently read a paper at the rooms of the Social Science Association advocating the propriety of local governing bodies undertaking the construction of street tramways. He endeavoured to show that no apprehension need be felt that the tramways would prove a commercial failure, by quoting statistics in reference to similar undertakings in various cities of America, and urged the necessity of a Royal Commission being appointed to inquire into the subject. In the course of a discussion which followed the reading of the paper, Dr. Brewer, M.P., strongly objected either to the Government or the Board of Works undertaking the construction or working of street tramways. It was, he said, certainly not within the functions of the former, and while so much prejudice existed in the minds of the vestries against the introduction of tramways into the public thoroughfares, it would be unwise and unwarrantable for the Board of Works to undertake the task.

FIRE IN A CHURCH SPIRE.—On Saturday night, about nine o'clock, sparks were observed to be coming out of the top part of the spire of S. Saviour's Church, Bamber-bridge, near Preston, under which there is a flue, and as they continued to increase, it became quite apparent that there was something on fire in the building. A number of men proceeded to the church with ladders, &c., got up the tower, and on reaching the base of the spire found that the beams which are inserted for the purpose of strengthening the stonework, were all in flames. There was a very strong wind blowing from the west, and this fanned the flames considerably. The flames were got under. All the higher beams in the spire were burnt away, and some of the lower ones were damaged. The fire is supposed to have originated through the over-heating of the flue which runs through a portion of the spire.

HALIFAX SCHOOL OF ART.—On Friday evening the annual meeting was held at the Mechanics' Hall. Mr. H. C. McCrea (Mayor) presided, and the report stated the regular classes have maintained a good average attendance throughout the year, in marked contrast to previous years, when the attendance during the summer months had always fallen off. One of the students, Mr. T. Holland, obtained a certificate of the third grade at the annual examinations held at South Kensington last February. This is the first third grade certificate obtained in this school. Two of the students, Mr. Drake and Mr. Smith, are now studying at South Kensington, having each obtained national scholarships of the annual value of £50. In this year's national competition one of the students, Mr. F. Spencer, obtained a silver medal for a design for "wall decoration." Mr. H. Robinson was awarded a bronze medal for "design for carpets." Three other students obtained prizes of books for successful elementary designs. The general results of the examinations were as follow:—1 third grade certificate, 1 national silver medal, 1 national bronze medal, 9 second grade prizes, 8 third grade prizes, 5 free studentships, 18 certificates in freehand, 23 certificates in model drawing, 3 certificates in perspective, 7 certificates in geometry, and 3 full certificates. The report was adopted, and the certificates and prizes having been presented to the successful students, an address on the "History of English Ornament" was delivered by Mr. R. R. Holmes.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Royal Institute of British Architects.*—"On the New Buildings for St. Thomas's Hospital." By Mr. H. Currey, F.R.I.B.A. 8 p.m.

TUESDAY.—*Institution of Civil Engineers.*—(1) Discussion on Mr. Browne's paper "On the Strength of Lock Gates." (2 "On Train Resistance on Railways." By Mr. W. Bridges Adams. 8 p.m.

WEDNESDAY.—*Society of Arts.*—"On new Paper-making Materials, and the Progress of the Paper Manufacture." By Mr. P. L. Simmonds. 8 p.m.

THURSDAY.—*Society for the Encouragement of the Fine Arts.*—"On Prehistoric Art." By Dr. G. G. Zerffi. 8.15 p.m.

FRIDAY.—*Architectural Association.*—"London as a Field of Study for an Architect." By Mr. T. Roger Smith, F.R.I.B.A. 7.30 p.m.

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Chips.

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New schools for the sons of poor clergymen are in course of erection at Leatherhead, Surrey, at an estimated cost of £12,500.

A large new model lodging-house is to be erected in Wigan-street, Silsbridge-lane, Bradford, under the auspices of the Bradford Model Lodging-house Company.

The first section of the new market at Newton Abbott, Devon, was opened last week.

Baylham parish church, Suffolk, was reopened on Friday, after extensive restorations. North and south transepts have been built, the old pews have been replaced by oak benches, the unsightly west gallery has been removed throwing open a handsome two-light west window, and a new stained glass three-light east window has been inserted in place of the old one. The mullions of all the windows, some of which were formerly of wood, have been removed and fresh ones inserted

The Metropolitan Board of Works has forwarded a cheque for £2,100 to the S. Olave's District Board of Works, in aid of the cost of widening a portion of Tooley-street, Southwark.

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Timber Trade Review.

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PRICES, 17th January:—Grooved, tongued, and beaded flooring boards, per square.—Fredrickstadt 1st yellow, ⅝in., 7*s* 3*d*; do. 1st white, ⅝in., 6*s*; ½in., 5*s* 3*d*; do. 2nd white. 1¼in., 7*s* 6*d*. Prepared flooring boards not grooved, &c.—Fredrickshald 1st white, 1in., 7*s* 6*d* to 9*s*; ¾in., 7*s*; do. 1st yellow, 1¼in., 13*s* 3*d*; 1in., 10*s* to 10*s* 3*d*; do. 2nd yellow, 1in., 7*s* 3*d* to 8*s*; 1¼in., 10*s*.

Deals, &c., per Petg. std.—Saguenay best bright yellow pine, 15*l* 10*s* to 15*l* 15*s*; do. mixed yellow, short lengths, 9*l* 15*s* to 11*l* 15*s*; do. 2nd bright, 11*l* 5*s* to 12*l* 15*s*; do. 3rd bright, 8*l* 5*s* to 9*l*; do. 4th bright, 11*l* 5*s* to 12*l* 15*s*.

Soderham mixed yellow, 9*l* 5*s*; do. 3rds, 8*l* 5*s*.

Quebec pine, 120 12ft. 3 × 11in.—1st bright, 19*l* to 19*l* 10*s*; 1st dry floated, 17*l*; 2nd dry floated, 12*l* 10*s*; 2nd floated, 12*l*; 3rd bright, 8*l* 15*s*; 3rd floated, 9*l*.

Petersburg 1st white, 7*l* 15*s* to 9*l* 15*s*; do. 2nd, 7*l* to 7*l* 10*d*; do. 1st yellow, 10*l* 5*s* to 11*l* 5*s*.

Nystad white, 6*l* 5*s* to 6*l* 15*s*; Wybourg 1st yellow, 9*l* 5*s* to 9*l* 15*s* do. 2nd, 7*l* 15*s*.

Husum 3rd yellow, 9*l*; Wifsta Warf mixed white, 7*l* 15*s* to 8*l* 5*s*; Uleaborg mixed yellow, 8*l* 10*s* to 8*l* 15*s*; do. 3rds, 7*l*; Sundswall mixed yellow, 8*l* 10*s*; do. white, 9*l*; do. 3rd white, 8*l* 5*s*; Kramfers 3rd yellow, 8*l* 5*s*; do. mixed white, 7*l* 10*s*; do. 4th white, 6*l* 5*s*.

Gefle mixed yellow, 11*l* 10*s*; do. 3rd, 9*l* 5*s* to 9*l* 10*s*; do. 4th, 8*l* 5*s*.

Gamla Carleby 1st yellow, 7*l* 10*s* to 8*l*; do. boards, 5*l* 15*s*.

Fredrickshald yellow, 4*l*; do. white, 4*l* 10*s*.

Timber, per load.—Dantzig best middling, 4*l* 10*s*; common middling, 2*l* 5*s*.

Per 120 12ft. 3 × 9.—Quebec 1st spruce, 15*l* 10*s* to 18*l* 5*s*; do. 2nd, 12*l* 5*s* to 14*l* 10*s*; do. 3rd, 13*l* to 13*l* 15*s*; Lowerport 1st spruce, 14*l* 15*s* to 16*l* 15*s*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:—

Pig Foreign	per ton	£17 10 0	£0 0 0
,, English W.B.	do	19 5 0	19 7 6
,, Lead Co.	do	18 15 0	19 0 0
,, Other brands	do	18 0 0	18 5 0
Sheet Milled	do	19 0 0	20 0 0
Shot, Patent	do	20 10 0	21 0 0
Red or Minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry	do	27 0 0	0 0 0
,, ground in oil	do	0 0 0	0 0 0

COPPER:—

British—Cake and Ingot	per ton	£70 0 0	0 0 0
Best Selected	do	71 0 0	0 0 0
Sheet	do	74 0 0	76 0 0
Bottoms	do	78 0 0	0 0 0
Australian	do	70 0 0	74 0 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars, cash	do	64 0 0	65 0 0
,, Refined ingot	do	69 0 0	72 0 0
Yellow Metal	per lb	0 0 6⅜	0 0 7

IRON:—

Pig in Scotland, cash	per ton	£2 11 4½	0 0 0
Welsh Bar, in London	do	7 10 0	7 10 0
,, Wales	do	6 7 6	6 12 6
Staffordshire	do	7 15 0	8 5 0
Rail, in Wales	do	6 5 0	6 10 0
Sheets, single in London	do	9 5 0	10 5 0
Hoops, first quality	do	8 15 0	9 5 0
Nail Rod	do	7 7 6	7 15 0
Swedish	do	9 10 0	9 15 0

TIMBER.

Teak ...load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	0
Dantzic oak	5	5	6	15
,, fir	2	15	4	0
Memel fir	3	0	4	0
Riga	3	3	3	10
Swedish	2	7	2	14
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	4	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	10	17	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do.	12	15	13	10
Archangel, yellow	11	10	13	10
St. Petersburg, yel.	12	0	13	10

Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per	s.	d.	s.	d.
sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale....per ton	£36	10	37	0
Sperm body	80	0	0	0
Cod	35	10	0	0
Whale, Sth. Sea, pale	36	0	37	0
Olive, Gallipoli	49	0	0	0
Cocoanut, Cochin, ton	45	0	0	0
Palm, fine	0	0	0	0
Linseed	30	0	30	5
Rapeseed, Eng. pale	48	10	0	0
Cottonseed	28	0	33	0

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Trade News.

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TENDERS.

BLACKFRIARS.—For works in Water-lane, Blackfriars, for Messrs. Spiers & Pond. Mr. E. Power, architect. Quantities supplied by Mr. A Peebles:—

	No. 1 contract.	No. 2 contract.
Garland	£1645	3555
Barnett	1520	2850
Turner	1406	2883
Hill & Son	1319	3118
Jackson & Shaw	1312	2537
Colls & Son	1278	2578
Brass & Son	1265	2703
Nightingale	1263	2754
Ashby	1259	2563
Newman & Mann	1255	2826
Nelson	1242	2710
Henshaw	1217	2624
Perry	1208	28-8
Bracher	1200	2800
Foster	1199	2563
Browne & Robinson	1197	2573
Sewell	1193	2589
Aviss & Co.	1174	2625

CATERHAM.—For new offices opposite terminus, Caterham, Surrey, for Mr. Richard Martin. Quantities supplied by Mr. Fred. Sparrow, 80, Richmond-road, Barnsbury, N.

Smethurst	£1110
Hearle	1087
Turner & Son	1032
Jarrett	1012
Langmead & Way	970
Ward	965

STOKE NEWINGTON.—For rebuilding the "Black Bull" public house, Stoke Newington. Mr. James Harrison, architect. Quantities supplied by Mr. John Leaning:—

Little	£1621
Roberts	1585
Ashby & Sons	1546
Perry & Co.	1475
Browne & Robinson	1467
Coleman	1459
Ennor	1421

WEDNESBURY. — For townhall, Wednesbury. Messrs. Loxton Bros., architects, Wednesbury:—

		Reduced
Brewer, Wednesbury	£3790	£3114 0 0
Wilkes, Birmingham	3730	3119 10 11
Round & Bagnall, Oldbury	3576	3010 0 0
Stephenson, Chelsea	3560	2912 0 0
Briley, Birmingham	3555	2808 0 0
Whittome, Stafford	3485	2801 19 0
Pugh, Birmingham	3379	2813 3 5
Chappelle, Willenhall	3300	2700 0 0
Stockton & Son, Oldbury	3215	2621 3 10¾
Wilkes, Darlaston	3149	2635 13 0
Moore, Walsall	2900	2361 0 0
Do., further reduced tender (accepted)		2325 0 0

CONTRACTS OPEN FOR BUILDING ESTIMATES.

WHITCHURCH, Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. Local Board Officer Whitchurch, Salop.

WHARFDALE UNION, Feb. 9.—For plans, specifications, and estimates for the erection of a new workhouse, to accommodate 150 inmates, exclusive of vagrants, on ground situate at Newhall, near Otley. C. J. Newstead, clerk to the guardians, Board-room, Borougbgate, Otley.

MUNICIPALITY OF COLOMBO, Jan. 31.—For the preparation and supply of the smith and founder's work required for the new public markets and municipal offices at Colombo, Ceylon. S. Grenier, secretary, M.C., Colombo.

WAR DEPARTMENT CONTRACT, Feb 4.—For the necessary work and materials required in the performance of work and repairs, and supply of labour or materials separately, as required for the service of the War Department, to the buildings in the Permanent Barracks, camps, or property at Aldershott, and connected with the War Department property at or in the vicinity of Aldershott. Director of Contracts, War Office, Pall Mall.

HEREFORDSHIRE, Jan. 31.—For the erection of farmhouse at Hegdon Hill, near Bromyard, Herefordshire. Ernest A. Day, architect and surveyor, Foregate-street Worcester.

WAR OFFICE CONTRACT FOR TIMBER, Feb. 4.—For the supply of dry ash plank, of the very best and toughest quality, thoroughly seasoned. Forms of tender may be obtained from the Director of Contracts, War Office, Pall Mall, London.

LONDON AND BLACKWALL RAILWAY COMPANY, Jan. 24.—For brickwork, ironwork, earthwork, and other descriptions of work required for the construction of a part of the Millwall Extension Railway, about 650 yards long, near to the East Ferry-road and the side of the river Thames opposite to Greenwich Hospital. John F. Kennell, secretary, offices, London Terminus, Fenchurch-street, E.C.

LONDON (St. Luke's Workhouse), Jan. 25.—For the erection of a kitchen and offices at the St. Luke's Workhouse, City-road. James W. Hill, Clerk to the Guardians, Clerk's Offices, Workhouse, Gray's-inn-road.

POPLAR, Jan. 26.—For the erection of stabling at Brunswick street, Poplar, for the London General Omnibus Company (Limited). A. G. Church, general manager and secretary.

LEEDS, Feb. 2.—For the completion of a villa residence in Chapeltown-road. Alfred H. Thompson, architect, Park-square.

ESSEX, Jan. 25.—For the construction of an intercepting sewer, subsidence tanks, sand and earth filters, with aërating apparatus, embankments, labourer's cottage, and other works necessary for the purpose of dealing with the sewage of Buckhurst-hill, by means of intermittent filtration. William Hunt, Clerk to the Sewer Authority, Chigwell, Essex.

WHITCHURCH (Whitchurch Local Board), Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. S. M. Lockwood, architect, 85, Foregate-street, Chester.

CARLISLE, Jan. 25.—For the building a church at Chalk Foot. Messrs. Cory & Ferguson, architects, the Courts and Bank-street, Carlisle.

SOUTHEND LOCAL BOARD, Jan. 31.—For certain portions of the house drainage connections to the main sewers. W. Gregson, jun., clerk, Southend Local Board Office, Royal Hotel, Southend, Essex.

LEEDS, Jan. 27.—For the erection of six houses in Camp-road, Leeds. 64, Meanwood-road.

KENT (Coastguard Contract), Jan. 25.—For the erection of a coastguard station at Swale Cliff, Kent. Coastguard Watch-room, Whitstable.

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BATH AND OTHER BUILDING STONES OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,
Quarrymen and Stone Merchants.

List of prices at the Quarries and Depots, also cost of transit to any part of the United Kingdom furnished on application.

BATH STONE OFFICE,
[ADVT.] CORSHAM, Wilts.

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BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

John Hughes, Liverpool, builder, Jan. 30, at Liverpool.—John Martin, Chatwell Court, late of S. George's, Salop, ironfounder, Jan. 30, at Stafford.—George Roots, Bradbourne, near Sevenoaks, brickmaker, Jan. 25, at Tonbridge Wells.—Henry Williams, Sedgley, firebrick manufacturer, Jan. 28, at Dudley.

PUBLIC EXAMINATIONS.—ACT, 1869.

Feb. 10, H. Driver, Lee, Kent, architect and builder.—Feb. 6, J. M. Edwards, Thornton Heath, builder.—Feb. 10, J. Harvey, Bristol, builder.—Feb, 22, G. Westcott, Saltash, ship builder.

DIVIDEND MEETINGS.

Feb. 25, J. Cutler, Bournemouth, builder.—Feb. 2, E. Parsley, Clevedon, Somerset. builder,—Feb. 15, T. Underwood, Abersychen, Monmouthshire, ironmonger.—Jan. 28, M. A. Jones, Nelson-street, Rotherhithe, late timber dealer.—Jan. 27, J. Casbolt, Balsham, Cambridgeshire, bricklayer.—Jan. 27, T. V. Leverage, Cambridge, builder.

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PARTNERSHIPS DISSOLVED.

Bolt & Co., Newport, Monmouth, builder.—Smith & Co., North Bierley, brick manufacturers.—Pritchard & Co., Llangollen, timber merchants.—Popes & Bindon, Bristol, archieects.—Hall & Middleton, Harewood, Lancasbire, contractors.

BREAKFAST.—EPPS'S COCOA.—GRATEFUL AND COMFORTING.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—JAMES EPPS & Co., Homœopa icChemists, London.

THE BUILDING NEWS.

LONDON, FRIDAY, JANUARY 27, 1871.

MONUMENTS OF ART.

I. PROLEGOMENON.—In order to study the history of works of art with real advantage, it is above all necessary to make ourselves acquainted with the geographical position of a country, the formation of its mountains, the flow of its rivers, and its connection with the sea. Next we have to consider its population from an ethnological point of view; then the religious, political, and social condition of its inhabitants. Art takes its origin in necessity, and in the cravings of our intellectual force to satisfy the demands of necessity. Necessity is created by the influences of climate and soil. Our intellectual power is either developed or checked by our moral condition, of which religion and the political and social state of a people form the basis. Art cannot be studied one-sidedly. If studied so, it remains for ever a mere product of chance. But art is subject to firm, cosmogonical laws; in studying the history of art we have to trace the working of these laws, and to find out the causes why art should have succeeded under certain conditions, and why it should have remained stationary or failed altogether under others. In tracing art to its forms at different periods of the historical condition of mankind, we become conscious of its gradual growth, and of the causes which promoted that growth. In describing the plates, which are photo-lithographic reproductions of the great German Historical Atlas of Art, which has reached a second edition,* I shall briefly point out the causes which produced certain forms of art, note the influences on the productions of other nations, draw analogies, and dwell on the connecting links between the artistic forms of one nation and another. Art, in its actual state, is the sum total of previous products, only in different combinations.

II.—BABYLON AND NINEVEH.—The alluvial valley of the Euphrates and Tigris was undoubtedly the seat of a most ancient civilisation. Correct dates are wanting. The forms of art of the Babylonians and Assyrians afford a proof that the nomadic element was prevalent with them even after they distinguished themselves by brilliant deeds in war, an extended commerce, and many valuable products in the arts of peace. The valley of the two rivers, with its connection with the Persian Gulf, was early the high road of commerce, the link between India, Central and Northern Asia, and even Europe. The Babylonians, Assyrians, and Persians were Aryans. Their language rooted in the Zend, their mode of writing was the cuneiform. Their works of architecture and sculpture, their textile fabrics, furniture, and mode of ornamentation were analogous. All this points to a similarity of social and political conditions. In all their works of art the lay element predominates. The king or ruler, with his deeds in warfare or at the hunt, in the banquetting hall or in offering sacrifices, is the principal figure. We have with them traces of huge towns and palaces, but scarcely any temples. The so-called Temple of Baal or Belus (Helios, the sun) was most probably an astronomical observatory. Their sculpture is full of vigour and life, but it bears all the marks of a state of transition from savage art to that of the warfaring nomad. The oldest remains of Babylonish and Assyrian art are found in the most southern part of the great group explored by Mr. Layard and M. Botta. Here we have the Birs (Burg) Nimroud, and in a north-western corner a terraced pyramid 150ft. at the base, supposed to have been the tomb of Sardanapalus or Ninus. On the Tigris, in a northern direction, we have the ruins of Nineveh, Khorsabad, and Kouyundjik. The buildings were all terraced. The rooms surrounding the courtyards were narrow and long, the walls generally of sun-dried bricks, and from 7ft. to 17ft. thick; they are only preserved in their lower parts, showing no traces of architectonic divisions. They were covered throughout their whole length with thin slabs of sandstone or alabaster, to a height of from 8ft. to 10ft. Above them a frieze of coloured and glazed tiles seems to have completed the wall. What the ceilings and inner divisions were can only be surmised. In the sculpture of Assyria, as well as Babylon, there is very little of symbolism. With the exception of some eagle-headed priests, and some lions or bulls with human heads and wings, we have only scenes of a general character. The reliefs are executed like those of Egypt; but Egyptian sculpture has somewhat of a settled style, is made according to a certain canon, and this is the principal reason that modern historians of art like Dr. Semper suggest the idea that Assyrian sculpture, with its unsettled but freer treatment, its sharp, rope-like muscles, and passive anatomy, must be of an older period than that of Egypt—though we cannot deny that hair and beards are treated with a kind of conventional stiffness.

Fig. 1 of our lithographic plate represents a symbolic, whimsical being with four wings; it was found at the façades of the entrance gate at Khorsabad (see "Le monument de Ninivé decouvert and décrit par M. F. S. Botta, mesuré et dessiné par M. E. Flandin." Paris, 1849). The double pair of wings reminds us of the cherubims of the Jews, with their four wings and four faces : the face of a man, the face of a lion, the face of an ox, and the face of an eagle. The head of our figure is covered with a tiara adorned with horns. These horns are equally found on Egyptian and Hebrew head-dresses, and seem to have been the distinguishing symbol of the priests. The under-dress reaches to the knees, and is adorned with fringes, as also the upper-dress; both are very much like the officiating dresses of the Greek clergy of the present day. In his right hand he holds a pine-apple, or rather sacrificial cake ; in his left he holds a basket or vessel with the juice of the sacred tree, the gaokerena, the fruit of which is the white haoma (with the Indians, "soma"), for the Zend people had also two sacred trees : the gaokerena and the painless tree. Bracelets and ear-rings show that personal ornamentation had already reached a high state of elegance.

Figs. 2 and 3 are men with lions. Hair and beards treated in the usual conventional, curly manner. The head-cover is wanting. The first figure is like that previously mentioned, as far as dress goes. The second is without the upper-dress and without sandals, and the hair falls down in long and single curls. Both are placed between winged bulls (see Fig. 7), and are above the usual size, and alike in position and action. As in Egyptian reliefs, their heads and breasts are in front, whilst the legs are in profile. This mistake is often observed in saints of the early Christian sculpture. Both figures hold in their left arms a lion, which they press vigorously to their bodies; the animals appear to object to this treatment, and their resistance is well expressed in the ferocious look, the open claws, and the curled tail. In their right hands they hold a kind of whip, ending at the handle in an animal's head, very much like that of a serpent.

Fig. 4. is a winged human being with a bird's head, from a gate at Khorsabad. The back figure, in dress, position, and expression has great resemblance to the figure in No. 1, but has no sandals, and the head is covered with a diadem instead of a tiara. The other figure in the foreground is, with regard to dress and position, also like No. 1. There is only one pair of wings, and the head is covered with a mask, representing an eagle's head. Our savages, the Mexicans of ancient times, the Greeks, Egyptians, Romans, the old Teutons, in fact nearly all nations, used to wear on solemn occasions, at religious or other festivities, masks of animals, so as to show their dignity by a frightful outer appearance. Why not the Assyrians too ? Some strings and tassels, and a kind of ornamental pin fastening the mask under the chin, strengthen my opinion that the head of the eagle was a mere head-dress, out of which, later, helmets with their crests were developed.

Fig. 5, eunuchs carrying a chair, the men richly dressed, but without beards ; the chair sumptuously adorned with sculptures — its legs ending in the shape of a pine-cone—on the back a small human figure is carved. We may in these forms especially observe the great contrast between Assyrian and Egyptian sculpture. In the latter the figures were drawn thinly and delicately, whilst in the former strong, round, and muscular forms predominate.

Fig. 6, "king hunting a lion" (Nimroud). The king may be recognised by his head-dress, the ends of the band hanging down his back. The king is accompanied by his charioteer. The lion pierced with three arrows breaks down roaring. Out of respect for the king's face the bow-string is interrupted where it ought to cross his person. This small, apparently unimportant, incident shows us that real art is impossible whenever despotism rules supreme. The horses are profusely decorated with strings and tassels. From the chariot hang quiver and arrows, and the battle-axe, all richly ornamented.

Fig. 7, winged bull with human head (Khorsabad). The entrance gates were adorned with such colossal sphinx-like animal, symbolically expressing the power of the ruler. Strong he was and mighty, like a bull or lion ; swift in his reward and punishment, as an eagle ; and wise and just, like a perfect human being, at least, ought to be.

Fig. 8, king on his throne (Nimroud). In pompous robes, with the tiara and the floating ribbons, sitting on a splendid chair, we behold the ruler of the Assyrians. In his right hand he holds a cup. Before him stands a eunuch, with a fan in one hand and a saucer in the other. Behind him appear two other eunuchs with fans. On both sides we have a bearded figure like that in Fig. 1, only the wings are missing, probably for want of space. Neither Assyrians nor Egyptians ever troubled themselves much about the principles of symmetry.

Fig. 9. siege of a fortress (Khorsabad). In one of the narrow halls, about 114ft. long and 29ft. broad, the walls were adorned with two rows of reliefs, interrupted by a frieze of cuneiform inscriptions. The upper row represents a festivity. Eating and drinking were two of the most important occupations of despotic Orientals. Proof, the many excellent gold and silver drinking cups of exquisite workmanship. We recognise in this propensity the characteristic of the Aryan race. The row below represents the siege of a fortress by the Assyrians. The besieged are *in extremis*—they already lift up their arms anxiously begging for mercy; they are probably some half-savage Turanians with skin dresses and square shields, whilst the besiegers are distinguished by beak crests on their helmets and round shields. The portal of the fortress is arched, showing that the Assyrians were acquainted with the construction of the arch.

Fig. 10, fight, and festive dinner (Khorsabad). The king in his chariot is about to let fly an arrow. His charioteer and an attendant protect him with their shields. The enemies are dressed like those in Fig. 9, and are partly flying, partly killed. The upper division is filled with the representation of a banquet. Armed servants hold drinking vessels, others fans ; guests are sitting on chairs in pairs, with goblets in their hands.

Fig. 11, passing over a river (Nimroud.) The king is seen sitting in a boat with two of his attendants drawn by two men; others are seated at the oars. The chariot of the king is in the boat, bow and stern of which are alike. The horses are tied with ropes to the boat and swim after it, as also a man, supported by an inflated skin.

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* "Denkmäler der Kunst." Stuttgard: Verlag von Ebner and Jeubert. 1858. London : A. Siegle, 110, Leadenhall-street.

Fig. 12, hunt and target shooting (Khorsabad). Hall VII., had also two rows of reliefs; the upper row was devoted to the representation of a banquet, the lower to hunting and shooting scenes. The execution is extremely childish. Trees with birds sitting on them are meant for a forest. A bird pierced by an arrow is in the act of falling—others are flying about. A young man is trying his skill by shooting at a target; his bearded attendant minds a horse and holds a hare in his hand.

All these reliefs are full of naturalness and keen observation, as far as the reproduction of animal life is concerned. The human figure is stiff, very much resembling the statuary of Early Christian art. We have on the long walls of the Assyrians historical records in stone, executed in the manner of tapestry. Their ornamentation is decidedly a reproduction of harsh embroidery. We may trace in Assyrian and Babylonish art two periods of development. We have sun-dried bricks and burnt bricks. We have coarser outlines and stronger muscles, and a more refined and delicate treatment of the human form. We have a simple life and a life full of refinement, with a complicated social condition. Their architecture bears everywhere the traces of wood construction later executed in stone. In their smaller plastic works, in specimens of which the British Museum is one of the richest in the world, we may see the traces of foreign influences. But this was the case at all periods of ancient and modern times from Nineveh to Athens and Byzance, from Thebes to modern Parisian art; whilst the monumental products preserve their peculiarity and distinctive national features, the movable products are subject to all sorts of influences, and they do not authorise us to draw over-hasty conclusions as to the priority of any style. We shall find a third period of development of Assyrian art amongst the Persians.

G. G. Zerffi.

THE CHURCHES OF LINDISFARNE.*

(*Continued from page* 16.)

In the rural deanery of Norham we have the priory church of Lindisfarne, on the Holy Island, which is distant about two miles from the main land. In the days of Bishop Carileph, Edward commenced his great plan, forming the nave 100ft. long, 44ft. wide, the length of the apsidal-ended chancel being 35ft.; the transepts were 62ft. by 17ft., with an eastern apse to each, and he brought masons with him from Durham to carry out his designs. Mr. Wilson waxes eloquent, almost too much so, while giving reins to his imagination as to the operation that ensued. "Whether the sea lapped or leaped against the island; whether the waves came softly gliding along the shore, or wildly and wrathfully lashing it with scourges of spray and foam; whether the gracious sunshine almost transfigured the new work, or opal mists lightly veiled it, or chill sea fogs drearily shrouded it, there were the clink, and clank, and chink of tools," &c. . . . "The sturdy columns, made winsome with dancette, chevron, and other ornament, rose higher and higher." . . . "Then crept and crossed the stalwart ribs over the aisles from pillar to responder;" "then grew the cunning vaulting," &c. "Labour is prayer, labour is praise, thought the masons." Well, we will hope they did, but we fear such fine writing is not to the taste of the present age, or that of our readers, and so we try to translate Mr. Wilson's poetry into plainer prose, and say that this chancel gave place to a longer one with rectangular end, built during the transition period between the Early English and Decorated styles. This new chancel was 50ft. long, and similar in that respect to the one that had previously been added to the parish church. Of this grand pile, now only ruins exist, and these are to be seen with their curious proximity to the Holy Island parish church (52ft. to rear of that building), reminding one of the dilapidated monster Temeraire following the puffing little tug-boat in Turner's picture, but we are indiscreetly lapsing into an imaginative vein ourselves, not certainly evoked by the charms of the blotted pen and ink drawing which forms the frontispiece of the volume before us.

Of the position of the parish church westward of the priory we have spoken; the bulk of it is Early English, though it contains also remains of Transitional Norman work, a portion of the north arcade with columns of red stone carrying arches of two chamfered orders, built with alternate vaussoirs of red and white stone, "an effective arrangement," says Mr. Wilson, "not found elsewhere in ancient work in the archdeaconry." The south arch and its arcade are Geometrical Decorated. The columns have no visible bases, and there are no labels to the arches. The church, the plan of which is a nave 56ft. by 19ft. 6in., with aisles, with porch to each, and chancel, 49ft. by 17ft., has been but indffferently "restored."

Ancroft is the only chapelry to Holy Island which has retained evidence of the character of the Norman fabrics which the monks reared in each of their chapelries on the mainland. They were content with a nave and chancel only. The latter has been unfortunately removed within the last few months to allow of an extension of the nave. A curious bell-tower was built in Edwardian times upon the west end of the church, three stories high, very sturdy and massive.

The church of S. Cuthbert, Norham, is mostly, as Mr. Wilson calls it, a very "noble, solemn, and reticent" Norman edifice; alas, however, with new aisles, tower and vestry. Originally the chancel was apsidal. The north arcade has octagonal and the south circular columns. On the south side of the chancel are still five rich Norman lights, high above the ground, with fall buttresses between each. On the north side the windows are, however, narrower and plainer. The chancel arch is of Norman work, wide, high and stately. On the north side of the chancel, close against the arch, low on the ground, are the remains of a small window, so splayed that it was possible for persons outside the church to see the rood-screen through it. A precisely similar window exists at Bothal Church. The stonework, scraped, is "of many tints."

In the village of Norham, on the banks of the Tweed, is a market-cross with ancient clustered base and six circular steps, and the grand old castle. The fortress of the Bishop of Durham is the pride of the neighbourhood.

The only other church in this deanery of the slightest architectural interest is that of S. Michael, Ford, within a walk of Flodden Field, and near to Ford Castle. The church, which Mr. Wilson alleges to have been faithfully restored, is Early English in style, consisting of nave with aisles with buttresses placed anglewise at the four angles; south porch, and chancel. An ancient and curious bell-turret surmounts the west end. It has openings for three bells, two below and one above, and is covered by a hipped roof.

The other fourteen churches in this rural deanery, though illustrated and described with equal elaboration, though perhaps less eloquence, are all modern structures of little or no value. The illustrations are not worth the paper they are printed upon, and the text which accompanies them only encumbers the work.

Out of seventeen churches in the rural deanery of Bamborough, all elaborately illustrated and described, only six are worth notice. The remainder are modern works, of which only one, that at Ellingham, is of respectable character; and that, with three or four more, have fragments of old buildings incorporated with them, and so far deserve to be chronicled. It is a strange omission that the names of the architects of the new and restored churches are never named, and this is to be regretted in such cases as those referred to with commendation. The pride of this rural deanery is the church of S. Aidan, Bamborough, rebuilt with much care, and in the best manner, in the Early English Lancet period; it is a large cruciform edifice possessing a fine west tower. It stands in an open position within view of the sea and of the noble castle. The chancel resembles those before described in point of length, and is lighted by couplets of lancets divided by buttresses on the outside, but joined together within by a rich continuous range of arches, producing a fine effect, and one that is partly characteristic of the work of this date in the locality. There is a crypt beneath the eastern portion of the chancel.

Old Bewick Church, a Norman building, is one of the four chapels that once belonged to Eglingham. In the Decorated period its apse was converted into a square end in a very curious manner by two clever and quaint pieces of corbelling between the round of the apse and two buttresses built at the angles for the purpose. This church has been recently and carefully restored.

Kirk Newton has a curious vaulted chancel, with the spring of the arch only 2ft. 9in. from the floor, and at right-angles with it a smaller chantry; and the contrast, says Mr. Wilson, between the modern lofty church and the low, stone-vaulted chancel, with its entrance like that of a cellar-door, is remarkable.

Chillingham Church, near Chillingham Castle, has Norman remains and a lordly altar-tomb of the Perpendicular period in the south aisle; and Duddington is an ancient Early English church with a curious plan—a long nave divided into two parts by a transverse arch in its centre, similar to the chancel arch.

These, with fragments of an old chapel at S. Cuthbert's, Farne Island, are the architectural treasures of the deanery of Bamborough.

The rural deanery of Rothbury has but little to boast of. Rothbury Church has a grand long chancel of Early English work; S. Michael's, Ingram, an ancient, massive, strong west tower, and remains of a larger, built incorporated with the present one. Whittingham has the famous Saxon tower figured in Rickman's work. S. Michael's, Alwinton, is an interesting structure of various dates, inclusive of Norman; and S. Cuthbert's, Elsdon, is a cruciform church of considerable interest and antiquity, with beautiful arcades of four arches and a fine five-light eats window; and S. Michael's, Alnham, completes the list of the churches of interest in this deanery.

The rural deanery of Alnwick is much richer than either of the last-named. S. Michael's, Alnwick, is a rich and spacious Perpendicular church with fragments of Norman work interwoven in its structure, with the chancel deflected considerably northward, and it contains five sculptured effigies. S. Lawrence, Warkworth, has a groined Norman chancel. S. James's, Shibotell, is a low, small Norman church; Lesbury is Early English; S. John Baptist's, Edlingham, is an example of the blending of military and ecclesiastical architecture, mainly Norman, as also is Rock Church; and Embleton and Long Houghton Churches are also ancient. But the Priory Church of SS. Peter and Paul, Brenckburn, is the boast, and deservedly so, of this rural deanery. It is Transitional, between Norman and English, in character, and it is now in course of restoration. Felton, Almworth, and

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* "An Architectural Survey of the Churches in the Archdeaconry of Lindisfarne, in the County of Northumberland." By Frederick Richard Wilson, architect. Printed and photo-lithographed by M. & M. W. Lambert, Grey-street, Newcastle-upon-Tyne.

Long Framlington, are also of antiquity and interest.

The rural deanery of Morpeth contains the church of the Blessed Virgin at Morpeth, an ancient building of various dates, and the church of S. James the Great, a recent one from the designs of Mr. Ferrey.

The churches at Rothal, Widdrington, Whalton, Bolam, Meldon, Mitford, Hartburn, Woodham, and Newbiggen, are all old, and many of them fine, with long chancels of the local character, and Mr. Wilson's illustrations and descriptions of them will repay examination.

As a work of local history and reference, this volume will have considerable value; but for general interest it would have been improved by considerable curtailment and discrimination as to the choice of material.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting on Monday evening last, Mr. T. H. Wyatt, President, in the chair, the minutes of the previous meeting having been read and confirmed, Mr. G. H. West, M.A., F.G.S., was elected an Associate.

THE ROYAL GOLD MEDAL.

The President announced that, subject to her Majesty's pleasure, the Council proposed this year to award the Royal Gold Medal to Mr. James Fergusson (cheers), whose numerous works on architecture fully entitled him to such a distinction, and which were so well known as to need no commendation from him (the President). (Hear, hear.)

THE SOANE MUSEUM.

Professor DONALDSON informed the meeting that Mr. Ouvry and himself had been elected trustees of the Soane Museum and to the Benevolent Fund of Sir John Soane. He (the Professor) had been chosen to succeed the late Mr. Hardwick, while Mr. Ouvry took the place of Mr. Pollock.

THE TOMB OF CHARLEMAGNE.

Professor Donaldson also read a letter from M. de Remistier, a German architect, respecting the paper read by the learned professor a few weeks ago on the tomb of Charlemagne at Aix-la-Chapelle. The writer of the letter concurred with the view taken by the Professor, and corrected one or two slight inaccuracies into which he had fallen.

BUILDING CONTRACTS.

Mr. T. CHATFEILD CLARKE asked what steps the Council had finally determined upon taking relative to the form for building contracts sent round to the members? He suggested whether it would not be desirable that a public discussion of the whole matter should not take place at the Institute. He had carefully perused the proposed form of contract, and it did not seem to him that there was so great a variance between it and the form of contract usually used as to make it a matter of difficulty to bring it into general use.

Mr. J. P. SEDDON (hon. sec.) said the matter was quite open to discussion at an ordinary general meeting, and it was always the idea of the Council that it should be so discussed. All that had been done was to explain the preambles of the matter, and the form sent round did not carry with it any authority, but merely embodied the opinion of the Council that such a form of contract was desirable.

Mr. HENRY CURREY, Fellow, then read an important and interesting paper on

THE NEW ST. THOMAS'S HOSPITAL

(of which building he is the architect). Mr. Currey commenced by a brief narration of the circumstances which rendered necessary the removal of the hospital from its old site at London-bridge. This necessity arose from the construction of the Charing Cross Railway, and although no part of the hospital buildings were required for the purposes of the railway, but only a corner of the hospital garden or ground, still a railway carried across the corner in question (by one of the hideous, trough-like box-girder bridges now so prominent by their disfiguration of some of the finest thoroughfares of London) within 12ft. of one of the wards was considered to be a highly undesirable adjunct to the hospital, and the railway company were compelled to take the whole of the hospital premises. Such being the case, one cannot but regret, said Mr. Currey, that the line was not taken directly across the hospital, passing through the centre of the London-bridge station, thus accommodating both the Brighton and the South Eastern lines, and crossing the High-street at a right angle, instead of the tortuous and inconvenient plan which has been carried into execution at an enormous cost. After referring to the arbitration for the assessment of the compensation (£296,000 being the amount awarded), Mr. Currey, having narrated the circumstances attending the selection of a new site for the hospital, spoke as follows :—

The question of a new site being settled, I was instructed to prepare the necessary design, and as the subject of competition is one of some interest, I may mention that on my appointment as architect and surveyor to the hospital, now some twenty-five years ago, the governors reserved to themselves the right of submitting any great work which might arise to competition. They did not, however, avail themselves of this right, and although it is not for me to say anything as to the result of the course they took, yet I venture to think that they were relieved from some trouble, anxiety, and expense, and I take this opportunity of thanking them for the confidence they reposed in me. A committee of governors, accompanied by myself, visited several of the continental hospitals, and the committee of the medical staff assisted in maturing the several matters of detail. The design is arranged on the pavilion system, now generally admitted to be the best for hospital purposes, and specially suitable for the land on which the hospital was to be erected. The nature of the site did not admit of the pavilions being placed on both sides of a central court or corridor, as at the great French hospital at Lariboisière, the hospital at Brussels, or the Herbert hospital, but they all ranged on the river side of one continuous corridor, 900ft. in length. This arrangement has the disadvantage of increasing the length of communication from the several departments, but at the same time it renders the ventilation more free by diminishing the length of the courts. The prominent defect of the Lariboisière hospital, viz., the too close proximity of the blocks with reference to their height, has, I hope, been avoided. The pavilions are placed at a distance of 125ft. from each other (the centre court being increased to 200ft.), which distance it was calculated would admit of ample sunlight and air to every block, the axis of the wards being due east and west.

The general disposition of the building will be seen by reference to the plan of the one pair story, on which the isolation of the blocks is more distinctly indicated, the intermediate spaces on the ground story being filled in with lower buildings, for purposes hereafter mentioned, and it was my endeavour to make the plan as simple as possible in its arrangements, for facility of inspection and working. Corridors run the whole length of the hospital on the ground and one pair stories, and connect the several blocks of wards or pavilions. These corridors are lighted by large windows on both sides, and in the event of it being deemed necessary to isolate any particular block, it could be done by putting screens across the corridors, and removing the sashes from the adjacent windows. These corridors are not carried higher than the one pair story, but the flat roof over forms a means of communication to the several blocks on the two pair story. The pavilions are placed at right angles to the corridor, from which a passage leads direct to the wards, on one side of which is the staircase. The wards are designed to be 28ft. in width by 120ft. in length, and 15ft. high, and will accommodate 28 beds, giving a cubic capacity for each patient of 1800ft. The beds are placed at distances of 8ft. from centre to centre, and the windows are arranged alternately with the beds, at a level to enable the patients to see out. A cheerful aspect is given to the wards by the end lights communicating with the external balconies towards the river, where patients may be placed on couches or chairs in fine weather. Small wards for two beds, immediately contiguous to but not communicating with the general wards, are provided in each block for the reception of special cases, which it may be deemed desirable to separate from the other patients. Adjoining the passage are placed the sisters' room, the ward kitchen, and a room for the medical officers' consultation. The staircases are wide and easy of ascent, the treads being 12½in. and the rise 5⅝in. The well holes are occupied by the large lifts and ventilating shafts hereafter referred to. The water closets, lavatories, and bath rooms attached to each ward are projected from the main building, and are cut off from the ward by intercepting lobbies, with windows on both sides. The water closets, lavatories, &c., have also windows on all four sides, to provide a thorough ventilation. In this department the foul linen and dust shoots are arranged, communicating with a receiving room in the basement for external removal. Dormitories are provided for the nurses and servants in the attic story, each having a separate sleeping compartment, care being taken to prevent the ascent of any ward atmosphere reaching thereto.

The main hospital may be said to commence on the first floor, and consists of three tiers of wards, there being four smaller wards provided on the ground floor for the reception of accidents, &c. The total amount of accommodation provided is about six hundred beds. The wards have flat ceilings throughout, and the windows are carried up to the ceiling, to ensure a thorough change of air in the upper part of the rooms. From the corridors on ground floor, patients will be quietly and conveniently conveyed by lifts to the various wards (these lifts will be referred to presently); the corridors will also afford a place of exercise for the patients in wet weather, and the covered colonnades adjoining the river will form an agreeable lounge for patients approaching convalescence.

The above description applies generally to all the pavilions, except the southernmost, which is designed for special diseases inadmissible to the general wards. The wards in this pavilion are smaller, and are arranged for males and females, being separated by a central staircase. The wards on the ground story correspond in general arrangement, but in consequence of the main corridor on ground story being placed next the internal courts, the wards are shortened to admit of the introduction of the necessary rooms in connection therewith.

The general entrance to the hospital is placed in the centre, and will be approached from the Palace New-road. The entrance hall is capacious, forming the sub-structure of the chapel, and its dimensions being large it will be found convenient for the reception of the patients' friends at the times appointed for visiting. The steward's or superintendent's offices. are placed immediately in front of the entrance hall, so that everything passing in and out of the hospital will be under his immediate supervision. From each side of the entrance hall branch off main corridors of communication connecting all the different departments. The ground floor of the first pavilion to the left is appropriated to the kitchen department, as being as nearly central as possible. It comprises kitchen, scullery, and cooks' rooms, with larder, bread room, &c., on the basement immediately under. A serving place is provided, where the patients' food will be distributed; it will then pass along the corridor to the different pavilions, and be conveyed up a small lift to the different wards. The ground floor of the first pavilion to the right is appropriated to the matron's department, with a commodious room for linen stores. On the right of the entrance hall is placed the principal staircase, which leads direct to the corridor on the one pair story, and will be used by visitors to patients, or for the general purposes of the hospital. It communicates directly with the resident medical officer's apartments, which are placed in the central block, consisting of sixteen rooms and a common room. Two operating theatres are provided (communicating with the corridors) lighted from the northern slope of the roof, and of ample dimensions to admit of a large attendance of pupils. A private room is attached to each theatre for the operator, with a second room in which a patient may be temporarily placed after an operation. Conveyance to the mortuary will be provided from the basement by an underground passage without exciting the patients or the public observation. The dispensary and surgery are placed conveniently for the service of the hospital into the main corridor, and of the out-patients (who are more particularly referred to hereafter), from the opposite side. The laboratory, drug and store rooms are placed in the basement story immediately under the dispensary.

All applicants for relief at the hospital will enter at the covered porch in Palace New-road, and will be received in one of the admission rooms according to sex; they are then informed whether they are to be admitted into the hospital or to be treated as "casualty patients," or as out-patients. If admitted, they would be passed through the hospital corridor to the wards. If "casualty," they would pass to the respective waiting-rooms for males or females, from thence into the male or female surgery. They will procure their appliances at a window immediately contiguous, and pass out at once. If the applicant is to be treated as an out-patient, he is directed to the out-patient department, which is placed in the corresponding wing. The out-patients enter at a door towards the southern end of the hospital, and pass through a large waiting-room, 110 by 37, in which they will be arranged and classified. The physicians' and surgeons' rooms are ranged parallel with this room. Having been seen by the physician or surgeon, the patients pass into a second room, where they will wait for medicine or appliances from the dispensary and surgery windows, and after receiving them, pass out into the Palace New-road, without entering the hospital corridor. A staircase leads direct from the out-patients' waiting-room to the out-patients' baths, which are provided in the basement. Sufferers from accidents arriving would be conveyed directly into the accident receiving room, and from thence, when the case was serious, immediately through the hospital corridor to the wards, and cases of accident on or in the neighbourhood of of the river may be brought to the hospital and received from the landing stairs.

The administrative offices are placed next Westminster Bridge, and will be approached therefrom; they will comprise the governor's hall, committee rooms, almoner's room, counting house, receiver's room, strong room, waiting rooms, and offices for the clerk and surveyor of the hospital, the treasurer's residence, &c. A staircase will connect the treasurer's house with the main corridor of the hospital. The two lower stories of this block will contain residences for porters. Four houses are provided for resident officers, containing eight rooms each, exclusive of domestic offices. They will be approached from the Palace New-road, and communicate in the rear with main corridors of the hospital. For the last eight years, nurses selected by Miss Nightingale have been trained (the governors believe with great advantage to the public) in St. Thomas's Hospital; and in the design for the new hospital, provision has been made for an increased number. The training institution adjoins the matron's residence, and will afford accommodation for forty probationers, who will be trained to the hospital wards for the council of the Nightingale Fund. Each probationer is provided with a separate sleeping apartment, ranged round a central gallery, with all necessary bath-rooms, &c., and a large day and dining room on the ground floor.

The chapel is placed in the centre of the building, communicating with the corridor, with convenient access for both sexes. The school buildings occupy the southern end of the site. They consist of a large museum, 85 by 30 and 34ft. high, with two galleries, a museum for chemistry and materia medica, medical, anatomical, and chemical lecture theatres, library and microscope room, dissecting and post-mortem rooms, chemical and pathological laboratories, &c., affording the medical student opportunities rarely if ever equalled in completeness. The extreme point is occupied by gardeners' sheds, stables, &c.

The building stands partly on land reclaimed from the river and partly on the shore. The foundations on the river portion are carried down to the London clay. Those on the shore stand on a sound bed of gravel, which overlays the London clay, the difference in level being obtained by wide steppings, (shown on the sections.) The ends of the blocks next the river have a solid foundation of about 22ft. deep over the entire surface, forming a toe to the whole. The long flank walls of the pavilions have a foundation 10ft. in width, and the same depth, 22ft., up to the old river wall. The concrete is then stepped up, and a platform of concrete, about 5ft. deep, is laid over the whole surface of the remaining portion of the building. The land or spring water stands at a level of about 4ft. above the clay. A drain was laid along the whole length of the hospital at the back of the river wall to a sump, and the excavations were all pumped dry before the concrete was put in. The whole of the concrete is composed of blue lias lime and clean Thames ballast up to a little above the land water line in proportion of six to one, all above that in the proportion of eight to one. The strata on the shore consisted of made ground, then gravel varying in compactness, resting on the London clay, which rises gradually up from the river. The strata on the river portion consisted of loose and sandy gravel down to the clay. The Embankment wall is also carried well down to the clay. As regards the terrace wall which intervenes between the end of the hospital blocks and the Embankment walls there was no weight of superstructure to carry, but it was necessary to go down to the clay to get anything like a bottom. To have carried the whole down would have been very costly. It was therefore determined to build it on piers and arches. These piers were carried down 5ft. square in concrete, six to one as before, and arches turned from pier to pier in Portland cement concrete, in the proportion of five to one, the ballast being fine and small. The arches were turned on boxed centres, which were shifted from time to time as the concrete hardened and the ground filled in all round. Two or three of these arches were turned in Coignet's bêton as an experiment, but the Portland cement concrete was found equally strong and cheaper. The foundation of certain portions of the low outbuildings at the extreme end of the ground are executed on the same principle on piers and concrete arches; I am glad to state that owing to the care with which the foundations generally were put in and the superstructure raised, I am unable to discover the slightest settlement over the whole area of the extensive building. Scarcely any relics of antiquity were found in the excavations.

During the execution of the foundations the working drawings and specification for the superstructure were completed, and the bills of quantities were prepared by Messrs. Strudwick and Co. and Mr. Richard Roberts, and tenders were received on July the 18th, 1867, from fourteen of the most eminent builders, the amounts ranging from £382,000 to £332,748, which latter was submitted by Messrs. John Perry and Co., of Stratford, and which, after full consideration, was accepted. Had stone ashlaring been used instead of red bricks the additional cost would have been about £25,000, which the governors did not feel justified in incurring, and which, personally, I see no reason to regret.

I will now proceed to state a few details of the construction of the warming and ventilating arrangements, and the cost. The footings were built with what are technically known as No. 2 wire cut Galt bricks, and the specification provided that the walls generally were to be built with the very best stocks, but that the piers of the flank walls of wards were to be built with Galt bricks, for reasons which I will presently describe, but owing to the great difficulty in obtaining a satisfactory stock brick in such quantities as we required the contractor found it to his advantage, considering the small amount of fracture and waste, to use Galt bricks, and the whole of the work is executed in that material. They make excellent good sound work, but unless the joints are left very rough on the edge they do not afford so good a key for plastering as ordinary stocks. The greater portion were supplied by the Burham Brick Company. Inverted arches are turned under all window openings above the footings, and the piers in flank walls of wards being reduced to a small area by the large window space desired, and having to bear on the ground story an accumulated weight of 110 tons, were carried up with the very best Galt bricks in Portland cement, with Portland stone bonders the whole size of piers, introduced at every 4ft. in height. Every alternate window in basement was omitted with a view to obtain a larger area of piers on that story. Hoop iron bond is introduced at the level of each floor where it runs continuously round the building without any necessity of severance. The area walls, 14ft. in height, where built as shown on plans and sections, with a view to resisting the great pressure of earth filled in at back, and to preserve the facing from being disfigured by percolation the base of the pockets was filled in with concrete. The building is faced with red bricks, and great pains were taken in ascertaining the best quality for the purpose, and none appeared equal in quality and colour to the Fareham brick. Negotiations were therefore entered into with Mr. Cawte, of Fareham, in Hampshire, who opened a new field adjoining his old works, and made special arrangements for supplying the quantity required, which were put into vessels at his yard, and brought alongside at Westminster, thus avoiding the damage and breakage of railway transit and carting from station. The bricks were made specially, and the size so arranged as to bond accurately with the Galt backing. The bricks are excellent both in colour and quality, and Mr. Cawte used every exertion to keep us supplied with material as the work progressed. The number of bricks consumed, exclusive of the facing bricks, has been about twenty-five millions. The stone used is for the most part brown Portland, from Messrs. Hollands' Waycroft and Maggott quarries; 17 saw frames, besides hand saws, have been constantly at work sawing the material, and the capacity of these saws appear to have been the gauge of the progress of the structure. Steam moulding machinery and large rubbing beds have also been used to a considerable extent. The quantity of stone used has been about three hundred and seventy thousand cubic feet. The consoles under main cornice, the caps of columns, and pilasters, the balusters, and the vases and terminals on balustrading are executed in Ransome's concrete stone. The material appeared peculiarly fitted in the present case, where there was necessarily a great repetition of the same model, and consequently a considerable economy. Had it not been for this useful material I should probably have had to be content with the long line of balustrading, unbroken by any vase or terminal. The pedestals would have remained vacant as they do in many instances where designed for sculpture, but the sculpture never arrives. It harmonises well with the Portland stone, and although many of my professional brethren would hesitate to use any artificial material, I venture to think that such hesitation may be carried a little to excess. The floors and flat roofs are constructed with wrought iron girders and "Dennett" arching. The latter material, as you are well aware, is composed of broken bricks or stone and sulphate of lime, in the proportion of three of brick to one of sulphate of lime, spread as concrete on a centre; a large quantity of the slag from the potteries at Lambeth has been used, and forms an excellent material for the purpose. The spans are for the most part 8ft. or 9ft., the thickness at the crown being 4in., increased to about 9in. at the haunches.

(To be continued.)

ON ARCHITECTURAL DETAILS APPLIED TO OTHER USES.*

(Concluded from page 52.)

AFTER passing in review the rise and decline of architecture in Egypt, Assyria, Greece, Rome, and Mediæval Europe, and the influences under which those effects were brought about, Mr. Pollen gave a sketch of the Classic Renaissance in Italy, and then proceeded to detail the various elements of architectural constructions and their varied uses. Having done this, he came to the real subject-matter of his paper, viz., the application of architectural details to other uses than in the construction of buildings, viz., to furniture, &c. On this subject he spoke as follows:—Look through our museums and collections, to which have been brought the splendid remains of the furniture and other objects in daily use in the sixteenth and seventeenth centuries. Many of the best specimens of these objects are made as if models for architecture. Columns, brackets, lines of a ovolo mouldings, cornices, coronæ, fasciæ, bases, plinths, dados, and other such members belong strictly to architecture. The proportions and the requirements of architecture demand these subdivisions; but the proportions and the requirements of furniture, or, again, of those objects which form a sort of link between furniture and architecture, do not demand this element. Small objects are easily and sensibly constructed of pieces of wood or bands of metal without divisions, and when so made are easily decorated with designs or dispositions suited to their forms. They do not want elaborate composition. That which looks well in architecture does not, of course, look ill in a model; but the reduced image or model, or the imitation, looks well only because it is a record and acts as a reference to principles sound and good elsewhere. If we turn over books containing the works of Lepautre, Delorme, or the later productions of Marot or of the Dutch and Flemish designers, all seem to have been absorbed by their notions of building. In Holland and in this country this principle of design ran to grotesque extremes. If we refer to examples of Dutch, even of Flemish, furniture, in the shape of cabinets, chests, chairs, &c., or to our own seventeenth century furniture, it must be admitted that the bedstead and cabinet fronts divided into heavy and grotesque arches, and abounding in lions' heads and lions' feet, are curious and interesting, but scarcely worthy of modern imitation. The lions' heads represent the spouts of Greek gutters, and the arches of cabinets are designed, perhaps, from recollections of the triumphal arches of Rome. But in these structures columns did real work, and arches were the only possible way of covering the space between the piers. In furniture, looking-glasses, wall panels, and other such uses, these features are actually useless and in the way. Any one of my hearers must have seen columns of this kind which are mere weights added to doors, and come out when the door opens as an adjunct applied to the stiles. The arches of bed-heads and the same forms in cabinets are merely recessed panels, which have to be provided for at the cost of the accommodation required. Furniture made to contain should certainly have all the interior capacity which the outlines of the whole piece will allow. I know that though this practice of designing only or chiefly as if we were always designing for some architectural feature is not wholly the growth of modern academies, and I wish to refer to one or two notable instances to be met with in older schools. The Classic sarcophagus, stone coffin, or funeral monument is certainly generally in the form of an architectural façade or construction. We may refer to the beautiful Lycian tombs in the British Museum, and to instances innumerable of the old sarcophagus. But it should be borne in mind that these forms, though not required, were symbols of a real idea. The tomb was *domus ultima*—the last home of man. It was small often, for the bodies were burnt. But the idea of this abode was that it was his *home*, his last house. Hence it was roofed—a gable, acroteria or corner tiles representing the rows that covered a roof formed elements necessary to remind the survivors that this was the last house or home. The Egyptian tomb was an actual house, with rooms, halls, and so on. The Mediæval tomb was suggestive of hopes and expectations rather than of final shutting-up in the chest or in the urn, and the form and disposition of the images or mementos of the dead was conceived accordingly. In the Mediæval architecture and the decorative sculpture and painting of that period the representations of man had usually architectural details attached or accompanying, such as the niches and tabernacle work borrowed from architecture, and used in glass painting, and often in recumbent figures on tombs. But here again the general objects of sculptured representation were heroes and saints, and the church or sacred building was significative of more than a mere room. It was supposed to be symbolic of the union of Christians into a definite body. The word "church" had then two significations, and the spiritual structure was said to be built up of living men. Hence the natural requirements for the protection of the image of a saint or a hero by placing it in a niche, and both to protect and give it every positive tribute of honour, covering it over with a rich architectural pinnacle or roof was the expression of a definite idea, as the house-shaped tomb was of a real house. But pieces of furniture deliberately designed on architectural forms I never could think successful. The Coronation Chair in Westminster Abbey was, perhaps, designed as a half religious and sacred shrine. It contains the famous "Stone of Destiny" taken by Edward I. from the Abbey of Scone. To sit and be crowned on this seat had a certain significance. To surround it with all the pomp and religious connection possible was very likely an object of the English kings. But a chair of wood has other more convenient and more natural methods of composition. When we compare with that sort of chair those of Evesham and other known specimens, the form strikes one as out of place in woodwork. A still greater anomaly is the silver chair preserved at Barcelona (of which a plate can be seen in Mr. Henry Shaw's "Mediæval Dresses." There the legs or supports of the chair are thin mullions of Gothic windows, and cusped tracery fills up their upper portions, and buttresses and arches compose the back. One might follow this sort of design into the tables and chairs we sometimes meet with in the later Renaissance period, and in the modern revival of furniture for Mediæval rooms and houses. Pugin himself pleaded guilty to many early extravagances of this kind when he was designing the furniture and fittings of Windsor Castle. On the consideration of shams, and architectural shams, I do not touch; in designing buildings suggestions are often made of details or structure which might be used even though they did not exist. Pilasters, for instance, are not columns or piers sunk into the wall. But as such a structural resource would be not otherwise than legitimate, it is sometimes suggested in the place and situation in which it would be no violation of propriety. My objection lies against the applicability of the forms themselves where they are used. The form of an interrupted pediment, again, is a favourite element of ornamentation of the seventeenth and eighteenth centuries introduced in the frames of mirrors, in cabinets, and in panel work of all kinds. A bust usually parts the two sloping members. But what possible meaning has an interrupted pediment? It does not represent a gable in architecture, nor does it help to protect a gable-shaped recess or niche of sculpture. Such a form could protect nothing. The bust itself, mounted on the base of a column, is to my thinking an awkward, a somewhat undignified, arrangement. The block of a terminal figure, or the old arrangement of bringing the head through a circular opening, is the best method of composition for a head in round relief. The heavy cornices with which these pediments are finished seem to me altogether out of place on any small scale. Whether in woodwork, plaster work, gold, ivory, or on any unreal scale of of this kind, it seems to my notions a misuse of form. With regard to figure sculpture and its representation in any material, it seems to carry with it what is congener to human representation. If we paint or sculpture a man we add to it whatever would be a man's natural requirements. Musical attributes, arms, and so on, also niches and other architectural details, are naturally represented as the implements or as the requirements of man, or of the man, whoever it be, who is represented. But then these are records or representations, parts of a picture, not essential methods of construction.

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* By J. Hungerford Pollen, Esq., M.A., of the South Kensington Museum. Read before the Associated Arts Institute, Saturday, January 7, 1871.

I make these remarks on some of the difficulties that beset artists when they are not actually riding the tall horse of architecture. There seems to me a certain loss of architectural design when its members and features are considered so many mere arbitrary ornaments, without any necessary meaning or significance, and without any restriction to their general use. It seems to me also that the vulgarity that has lowered our commonplace architecture, that for which accomplished architects are not employed, is owing in some measure to this ignoring of the definite meaning of columns, brackets, arches, the composition of bases, sub-bases, and so on, in architecture.

If we look at old Greek ornamentation, we do not see their chairs, tables, sofas, cups, bases, and mirrors containing the choicest specimens of Greek design. But these designs are appropriate to the objects they adorn. Of living races we shall find none equal in this inexhaustible invention and resource to the Japanese. But I do not mean to slight the decorative work of the modern Italian schools. In the first years of their existence sculpture and figure design formed the leading object of their compositions. It was but gradually that architectural ornamentation overrode this purer design. Yet they have left us great and effective designs, and their ornamentation on architectural fronts, walls, and panels is their strong point. Much that is, when taken in detail, rude and unworthy, is put together with much mastery of general design—a sense of the impressiveness of a great whole, in other words, with effect. Our Elizabethan architecture and ornament is full of anomalies. It scarcely bears restoration or imitation. But we all value it as we see it; so also are we admirers of the old furniture and decoration which has such faults. We are so because it has certain great qualities, or because of the excellence of the workmanship, or from its having picturesque or impressive elements in it, though it would not do for reproduction.

While any school of designers is possessed by great ideas and thoughts which are derived from familiarity with really great works, and the impression which intimate study of those works has made, such a school will always be influential; it will always leave a mark. It is that mark which excites the admiration or appeals to the sympathy of future generations. Now, however, we are a race of revivers. We are not possessed by very dominant ideas. We revive on the authority of others rather than under strong impressions made upon ourselves. It is natural we should look to systems that have been reduced to rulés and applied to a thousand uses under pressure of various kinds, modified by local prepossessions and habits of thought. The easy resource of taking ready-made elements of composition blinds us somewhat to the principles on which selections and adaptations from other systems ought to be made. To adapt from sculpture and painting, and still more from architecture, to woodwork or decoration, may be sometimes allowable for certain purposes, within certain limits; but it is an adaptation. Wooden objects, or objects in metal, or any other fine work, have each certain capabilities of decoration quite distinct, possible in each material, suggested by size, use, nearness to the eye, and by the value of the object. Designers should invent or design in accordance with these conditions, rather than put up with forms and details which chance to come readily to hand, but which belong altogether to other walks of art.

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THE FISH-POND ROOFS OF LONDON.

During the present winter we have seen, not London only, but the entire country, more than once covered with a mantle of snow. We have what people call "an old-fashioned winter," with an influence impartially extended to every county in England. Has it ever struck the Londoner that his own condition during the supervening thaws is quite exceptional, and wholly unlike that of his provincial fellow-countrymen? In the provinces he may see the snow lying for days and weeks on the sloping roofs, to melt when the thaw comes, fall spontaneously into the eaves-gutters, and find its way safely and without hand labour to the ground. How different is the state of things in the metropolis! Here we cannot afford to wait in patience for the thaw. We have sloping roofs indeed, but roofs innumerable whose inclination serves not to convey the fallen snow from off our dwellings, but to deliver it into their very midst, where it lies in thick heaps in the "V-gutters" above our ceilings, to find its way suddenly and without ceremony or warning of any kind into our bedrooms. We learn, after one or two "floodings," how to deal with the enemy in our own metropolitan way. Country cousins who may happen to be in town after a snow-storm may observe our "tricks and ways," and marvel at them. Do we leave the snow on our roofs, as do our country cousins? By no means. Well knowing by sad experience that London houses are not built to be snowed upon, we hire men to get through the man-holes of our roofs, and without even the Edinburgh "Gardy-loo" of Mistress Winefride Jenkins, pitch it off the middle of our roofs into the middle of our streets. Down falls each spadefull with a dull thud below, not always with a very correct aim, for most of our fish-pond roofs are masked with a compo balustrade or high parapet, over which, with an upward initiative, it must perforce be pitched. How is a man to know how, where, on what or on whom it may fall? perhaps harmlessly (as he hopes) into the middle or side of the carriage way, whence it must be removed by the scavengers; perhaps (worse luck) upon the roof of a passing cab; or, by mal-adventure, upon the footpath, with or without an intercepting wayfarer, as the case may be. Up it goes over the parapet; and, as

> Whatever goes up is sure to come down,
> Let every one take care of his crown.

All this is ludicrous enough, but will any one say it is in the least an exaggerated picture of life in London after a snow storm? It is unlike anything elsewhere in England. These wretched V or fish-pond roofs are to be seen nowhere but in London. A stranger passing quickly, say by railway, along the rear of a row of London houses will be puzzled to say where is the middle of each dwelling. Reasoning by provincial experience he will naturally think it coincident with the highest point of what he thinks are the span roofs. A closer inspection reveals the fact that it is the lowest part of the roofs (the valleys) that really stands over the centre of each dwelling, and that the apices he sees are really the tops, not of the roofs, but of the party walls. He is thus introduced to the profiles of the fish-pond roofs of London:—

> The "V" or "fish-pond" roofs whose weight
> Of plaster, and lead, and timber, and slate,
> Rests on the quarter-partitions, that lie
> Piled up several stories high,
> On timber joists that hardly can
> Bear their own weight; for they've to span
> The depth of the house that Jack built.

It is many years since in somewhat similar words to the above we denounced these roofs in the Building News. They are, if we mistake not, fiercely condemned by the late Mr. Alfred

Bartholomew. Yet they may be still seen in course of construction all round the metropolitan suburbs—at Notting Hill, Holloway, Kentish Town, &c., and many have been the flooded ceilings they have caused during the thaws that have succeeded the late snow-storms. We quoted the other day some remarks in the *Daily Telegraph* on the miserable condition of London after a snow-storm, especially in the choked up state of the streets, and the duty of the Metropolitan Board of Works to clear them of the fallen snow. But very much of the snow that encumbers our thoroughfares—snow that no single day's thaw will relieve us of—consists of the heaps formed by these discharges from our roofs, constructed so as to stow it away (as a veritable rain-water supply) behind our parapets. If the Metropolitan Board were to institute a law forbidding the throwing snow off the roofs into the public thoroughfares, it would do much to remove, or at least to abate, this dreadful evil, and in time we Londoners might substitute for our favourite fish or snow-pond roofs the ordinary span roofs of our country towns, and indeed of mediæval London itself; for these hideous contrivances are comparatively quite modern, hardly known before the bad old times of George IV. They seem to have come in with Hessian boots, sandals, swallow-tail coats, and hobby-horses, and the sooner we get rid of them the better for our streets and for our ceilings. Who knows but that a clause in the Metropolis Local Management Act or a by-law of the Metropolitan Board might in time inaugurate a new style of London street architecture—a high-pitch style of roof, that should render it no longer necessary to pitch the snow off the tops of our dwellings into the streets? We don't want the snow transferred to the streets, and we do really need an entirely new style of street architecture. S. S.

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NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 28.)

Plate 19.—Construction of Wreath for Quarter-Circle Stairs.

LET quarter circle for centre line of rail be struck with a radius equal to a square step. Draw tangents to form right angle A, B, C. Set off half a step on each side of B, and draw face of risers.

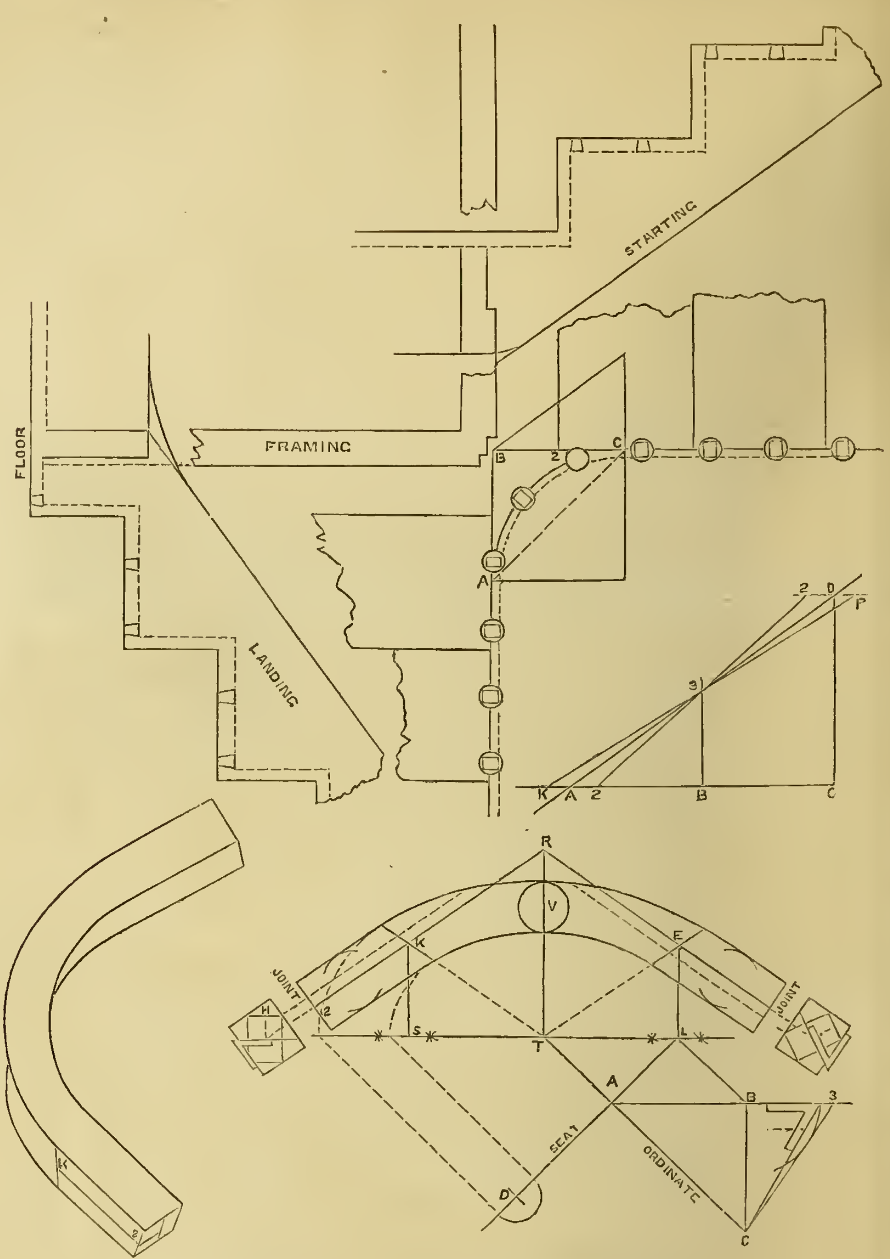
Next, set off one or two square steps. This arrangement of plan throws both shanks of wreath on same pitch as that of the stairs, and diagonal A C directs construction of mould as shown on lower part of plate.

Let A, B, C equal the two sides of square; same as on plan.

Extend A B, and make B 3 equal a riser. Join 3 C. Also, C A extended. Thus giving ordinate. Have seat square with it. Draw B L parallel with ordinate.

Let A T equal B 3 on right. Join L T extended. This is the pitch or major axis. To find elliptic curves, let A D equal A B. Set off on each side of D half width of rail. Then square up to cut the pitch.

Let T S equal T L. The drawing is now ready for mould. Join the edge of a board, and run a gauge line. Lay board on and mark L, T, S. Square over the lines. Let L E and S K equal L B. Make T R equal to A C. Join R K and R E both extended. These lines are tangents on mould, and when in position stand on pitch of stairs, and to be correct R K must equal 3 C on right. The straight wood on shanks may be any length desired. The width of mould is determined with greater nicety by finding the bevel for joints. In this manner: Take B for centre, and for radius a circle touching 3 C, cutting to left of 3. Join intersection and C, which gives required bevel. Next, set off half width of rail below B 3, cutting bevel indicated by dotted line. Set the compass along bevel. Take any point on tangents E, R, K, and make arcs, as shown. Draw straight wood cutting T E and T K. Next, let T V equal A B. Set off on each side of V half width of rail. Now find points to insert pins and sweep mould with a string. The mould represents upper surface of wreath, the stuff cut square through. The application of bevel to joints gives a direction to draw dotted lines shown on surface. Then cut off slab H on the left, and work to bevel. This done, apply a square to the bevelled edge, and draw from centre of joint the dotted line cutting at H. Continue this along edge, and square with joint.



NEW ELEMENTS OF HAND-RAILING.—PLATE XIX.

Now transfer 2 K to that on edge, and mark the plumb line with pitch board, in a similar manner to that shown on left. Next, lay mould on. Keep straight shank on convex side fair with that of beveled edge, and let straight part of mould on concave side, to the right, be fair with dotted line. Mark the stuff. Apply in like manner to under side.

Here the ground plan is arranged to have straight shanks of wreath stand on same pitch as that of the stairs.

How do we know that this drawing will produce such a result? Because, by observing the position of riser on left, it will be seen that its face stands half a step from corner B, and B 2 on right also equals half a step. Therefore, the centre of wreath must be a straight line; as can be proved by unfolding tangents A, B, C, on a board, in similar manner to that shown above the mould, it having corresponding letters.

Let B 3 equal a riser. Join A 3 extended. This having cut perpendicular from C at D, gives height of two risers, which correspond with that of A C on plan.

Let us go a little farther, and show pitches on concave and convex sides of wreath. Have rail, say 3½in. wide. Let A 2 and A K each equal half its width. Join 2.3 extended.

This gives 2.3.2 for pitch on concave side of wreath, and is much greater than that of A 3 D, which runs through centre of plank and agrees with tangents on mould. Join K 3 P. This being the pitch on convex side, it falls, and makes a different inclination. Now, suppose we increase width of rail, say 5in. This would cause pitch on concave to be still greater, and give wreath a clumsy and crippled appearance.

Next plate will show how to obviate this defect when large rails are required. The present drawing, however, is proper for rails the width of which do not exceed 3½in.

The outside strings of these stairs may be plank, which answers for carriage.

Let the corner for framing be cut, as shown, to receive carriage landing and starting. The cylinder may be staves and let into strings.

Make all the cuts according to plan.

Have framing and everything ready before you begin to fix.

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MONUMENTS OF ART.

ON January the 6th we announced the publication of a unique and comprehensive series of engravings illustrating the history of art from the earliest ages. The unusually dull weather we have had since then, and particularly in London, interfered with our plan for a short time. We now give the first plate, which consists of illustrations of groups of Assyrian sculpture, and a description from the pen of Dr. Zerffi, Professor of the History of Art at South Kensington. As we proceed our subscribers will perceive what a valuable work in art, the richest of the kind ever published in Germany, they will by-and-by possess.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

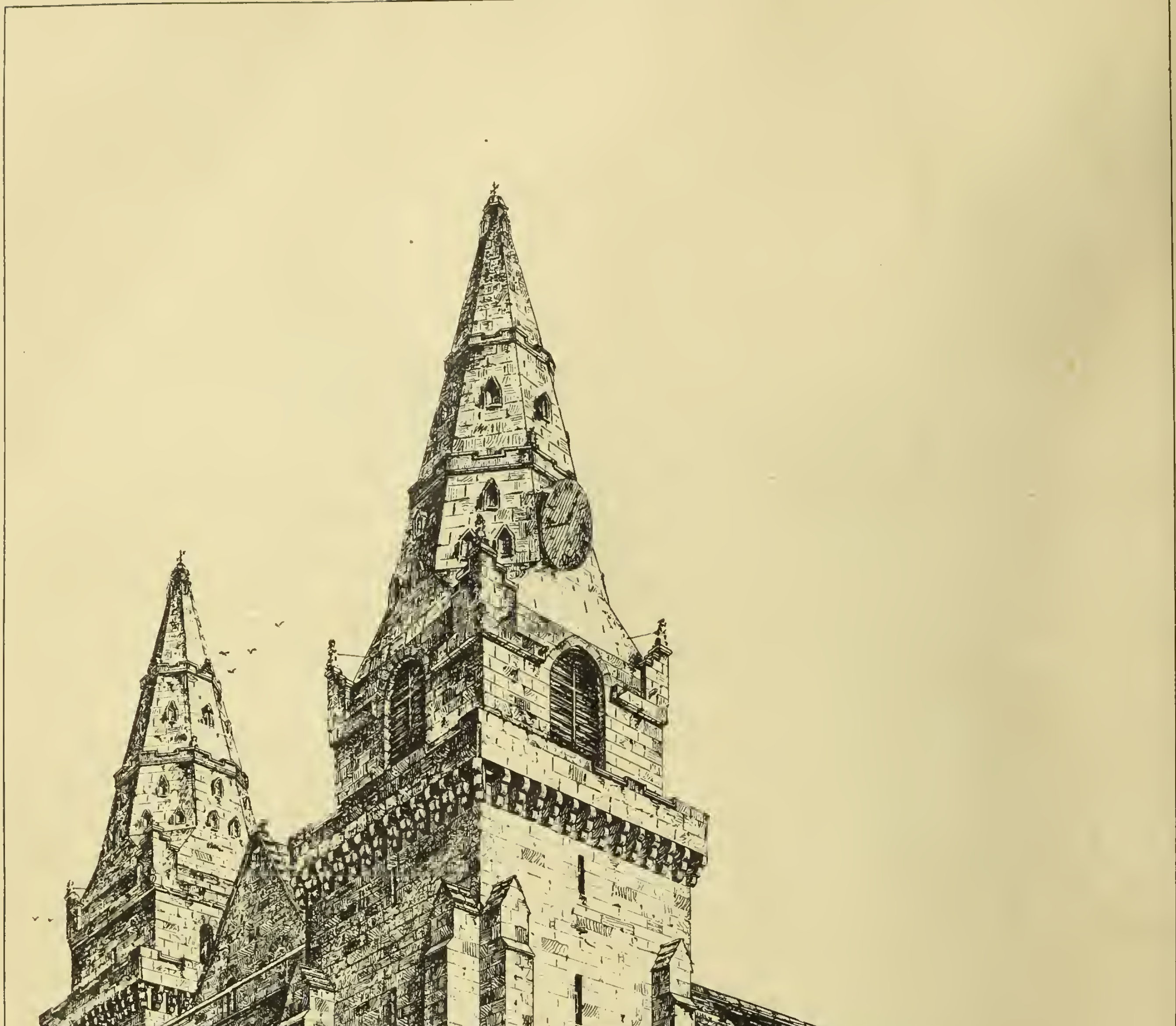
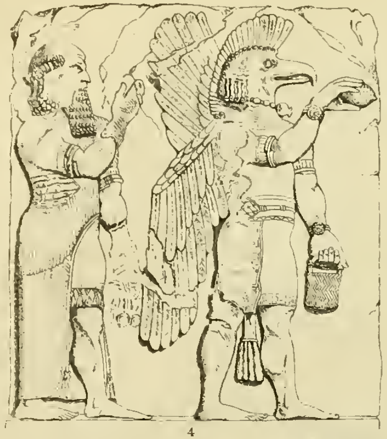


Photo-Lithographed by Whiteman & Bass

St. Machar Cathedral _ Old Aberdeen,

NAVE & WESTERN TOWERS.

Monuments of Art. SCULPTURE, No 1.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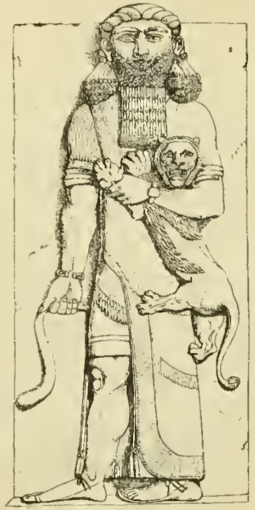
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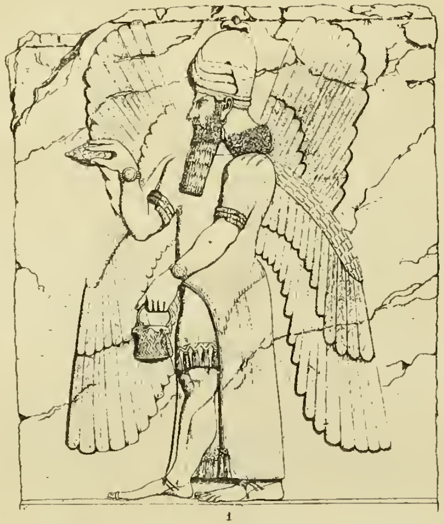
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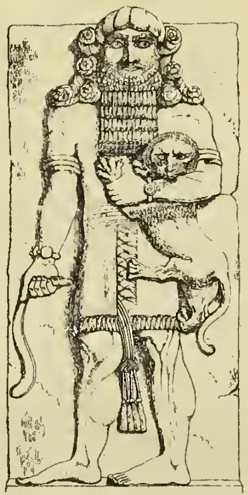
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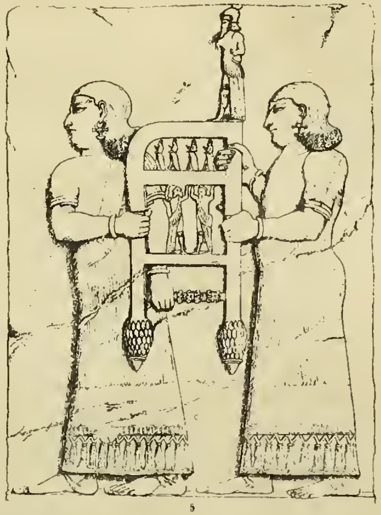
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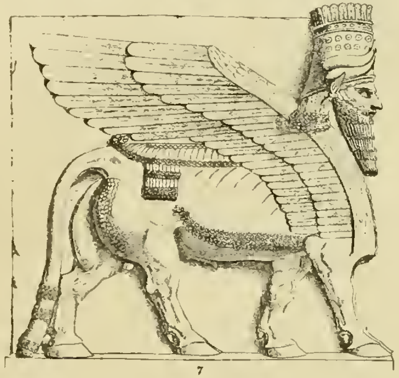
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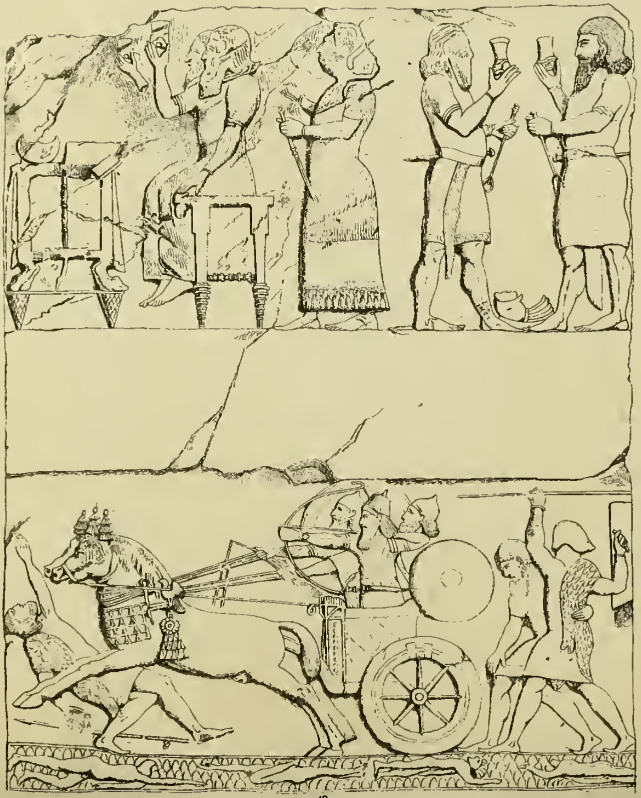
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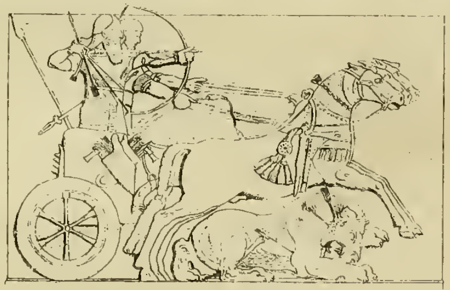
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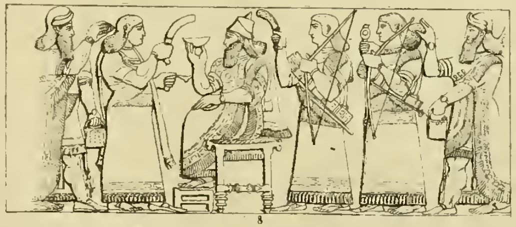
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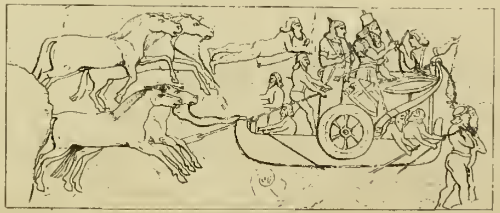
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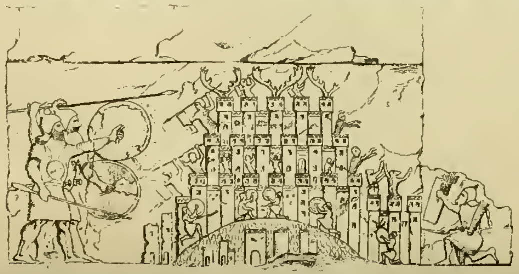
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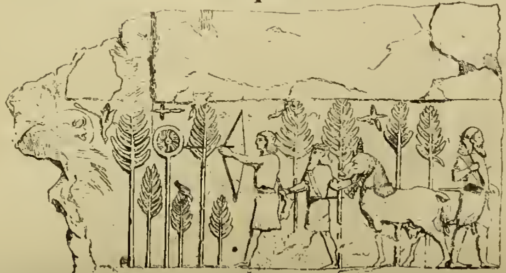
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Photo-Lithographed by Whiteman & Bass London

Furniture & Decoration.

DECORATIVE PROCESSES.

By "AN EXPERIENCED WORKMAN."

(Continued from page 52.)

THE ground for graining oak should always be thoroughly hard before commencing graining; if it is not so it is apt to reeve or curl in the act of figuring or marking-in the lights, and when the work is varnished these marks show a dirty edge, which is very objectionable in the finished work.

In the mixing of oil graining colour there are two or three things necessary to be noticed in order to its answering the purpose intended. In the first place the colour should work clean (technically "rub-in clean") and free. It will often happen that the colour will work stiff, and consequently dirty, and in this state will not only produce dirty work, but will occupy thrice the time in rubbing-in compared with colour properly mixed. Oil graining colour also requires to be megilped—that is to say, that oil colour alone will not stand when it is combed; the marks made with the comb will all run one into the other, and will thus be obliterated. To prevent this running the colour requires to be megilped, so that the comb marks will retain the exact form as left by the comb. This desirable end is accomplished by various means, amongst which may be named the ordinary bees'-wax of commerce, soft-soap, hard-soap, lime-water, whiting, and pure water. When bees'-wax is used the best means of dissolving it is to cut the wax into thin shavings or shreds; these are put into a suitable pot or can (earthenware or tin will do), half filled with pure linseed oil, into which a red-hot poker or other piece of iron is plunged, and stirred well. This will dissolve the wax thoroughly and mix it with the oil. When the wax is all dissolved the vessel should be filled with either oil or turpentine, which still further dilutes and mixes the wax, and serves also to prevent it from congealing, so that it may mix with the graining colour thoroughly. This should be properly seen to, or else the wax is apt to remain in lumps in the colour, and when the colour is spread upon the work for graining the wax will be spread unequally and will not harden, and, in fact, will not dry in parts, to the manifest injury of the work, so that it is absolutely necessary that the wax should be thoroughly mixed with the graining colour in order to produce good work. If soft soap is used, it should first be thoroughly worked up on a pallet or a board with either whiting or patent driers; by this means we break up the soap and amalgamate it with the driers, and it will then mix properly with the graining colour. Another method is to break up the soft soap in water to a thick froth or lather; with water in this state it may be beaten up and thoroughly mixed with the oil colour. When lime-water is used, about 2lb. of slaked lime should be thoroughly mixed in a paint-can full of water, and the lime allowed to settle; a portion of the water may then be added to the graining colour, and the two well stirred together until they are thoroughly amalgamated. If whiting be used for the purpose, the whiting should be ground in oil and then mixed with the graining colour. Pure water will also answer the purpose. As a matter of course, some grainers like one and some another of the above-named megilps. The wax is the most effectual for the purpose, but there are grave objections to its indiscriminate use. One of these is the fact that the wax causes the grain to stand up too high above the surface of the work, and as the natural grain of oak sinks below the surface in the real wood, it follows that the less the grain is raised in the imitation the nearer it will be to the real. This raised grain is also objectionable because it destroys that flatness and equality of surface so evident in the real wood. Soap, which in working has a medium degree of elevation of grain, is very objectionable in use, inasmuch as it is liable to cause the work to crack after it has been some time varnished and become hard, and it is doubly objectionable for use on outside work, as the frequent variations of temperature soon affect all grained work in which soap has been used, and is a fruitful source of cracking and blistering. Lime-water has also a tendency to cause varnish to crack. On the other hand, whiting, when used in oil graining colour, although it has the same effect as wax in causing the grain to stand up too high, also makes it work spongy and impoverishes the colour, for the moment whiting is mixed with any semi-transparent colours—such as Vandyke brown, burnt sienna, &c., &c., their purity and richness is destroyed. On the whole, we prefer to use pure water, for if it is well mixed with the oil colour, it answers the purpose of megilping it sufficiently to hold the combing until it sets; the water then evaporates and leaves no injurious effects behind, and the projection of the grain is less than it is if any other medium be used. The most useful colours for mixing oak graining colour are raw and burnt Turkey umber, Oxford ochre, Vandyke brown, and burnt sienna. The first three, with the addition of ivory black, are, in our opinion, all that is required for mixing any shade of graining colour. For light oak or wainscot graining colour, mix two-thirds linseed oil with one-third turpentine; add a little Oxford ochre and raw Turkey umber in sufficient quantity, according to the shade required and amount of stuff mixed. No rule of quantities can be laid down here, inasmuch as the quantities must be regulated by the workman at the time of mixing and place of using. Terabine, or liquid driers, should now be added, the quantities being governed by the fact as to whether the graining colour is required to be quick or slow drying. A safe and efficient quantity to use (that is, if the liquid drier is of the best quality) is about half an ounce to a pint of colour. This will cause the colour to dry in about seven or eight hours, but twice the quantity may be used with safety if the colour is required to dry very quick. Sugar of lead ground in oil may be used as a drier for graining colours, but the liquid drier is better. Many persons use the ordinary patent drier, which, if used in sufficient quantity, will also act as a megilp; but we altogether object to its use, as it not only injures and causes the colour to be muddy, but it is spongy, stands up too high, and, in fact, has all the bad qualities of the other megilps, without a single redeeming quality of its own. We may now briefly sum up the foregoing description of mixing oil graining colour, as follows: Mix burnt umber or Oxford ochre with linseed oil and turpentine in a can or pot, add terabine or liquid driers, beat or stir well up together; add pure rain-water in the proportion of one half pint of water to three pints of oil and turps; beat or stir up until the whole is thoroughly mixed together, then strain the whole through a fine strainer or a double fold of fine muslin. The colour should be thinned until it works freely and lays on clean. What we mean by laying on clean is that when the colour is being brushed over the work to be grained, if it is not properly mixed it will gather or accumulate in the quirks and corners, and will be shady and dirty-looking; but, if properly mixed, it will lay on evenly, and be easily spread, and will look clean and of one uniform shade of colour. It will be evident that this is a very nice point in the mixing, and is of great importance to the success of the work. Care and cleanliness of working is as necessary to the successful carrying out of this work as it is to more important work; and therefore it is essential that the colour, the brushes, and all working tools should be clean to begin with, and be kept clean. In mixing the colour for a medium shade of oak, it will be found best to use raw Turkey umber with a little burnt added, and for a rich dark oak burnt umber may be used alone, except a cool tone is required, when a little ivory or drop black may be added. We now come to the question of combs for imitating the grain of oak (hence the name graining). Combs are made of different substances, and are, of course, of different sizes. There are combs of horn, of steel, gutta-percha, vulcanised india-rubber, cork, and leather. Horn combs were about the earliest used for this purpose; these are made in exactly the same manner as the ordinary tooth-combs, and cut to the various sizes required. But there is this essential difference between the two: that while the teeth of the hair comb is cut taper and with a fine point, the teeth of the graining comb are left square and blunt at the ends, and of the same width throughout their whole length. The teeth are also about double the length of those of hair-combs. There are several sizes made, varying in width from a twentieth of an inch to a quarter of an inch, and some are graduated from fine to coarse, but these are not of much use in working. A Sheffield firm commenced some twenty years ago to make combs of thin steel, a decided improvement upon the horn comb, inasmuch as the teeth are not so liable to break in working, and they have a good spring, and are not clumsy in the handling. They also wear well, and are easily kept clean and in working order. There is one objection to the steel comb, especially the coarser-toothed ones: they do not comb clean, and do not part with the colour freely, and, as a consequence, the grain is left ragged and dirty looking. To remedy this fault, thick shoe-leather, gutta-percha, and vulcanized india-rubber combs are used for the first combing, and the fine steel combs for the second. These soft combs are all cut or prepared in the same manner, namely: they are first cut into squares of various sizes, from one to four inches. The edges must be cut perfectly square and level on all sides. To cut the teeth, it will be found the best plan to place a square either upon the edge of a square table or against a strip of wood and held firmly; the interstices between the teeth are now cut away with a sharp knife to the depth of about a quarter of an inch. By cutting in a slanting direction each way, the space between each tooth will be formed by two cuts, and the teeth may be left fine or coarse as may be desired. These combs cannot be purchased ready cut, and therefore it is necessary that the workman should cut for his own use. It must be understood that in cutting these combs, the interstices are not cut through the whole thickness of the material, but only bits are cut out of the edges; they act much better thus, and when they become worn with work the edges may be again squared and the teeth re-cut, thus forming a new comb. And so we may go on time after time until the whole of the gutta-percha or other material is used up, being a very economical use of material. For good serviceable work we prefer to use gutta-percha in conjunction with the finest cut steel combs, and the cork combs for occasional use on first-class work. The gutta-percha is cheap, wears well, is easily cut into any size, or very fine or coarse, and will do its work well. The cork is superior in many respects for producing really good work, but unfortunately it does not wear well, and therefore is not so serviceable for general use. Suitable cork may be procured at the cork-cutter's, and should be chosen with as few holes or bad places in it as possible, close in the grain and firm in texture; the cork-cutter himself will be the best judge, and he will for a trifling extra charge over and above the price of the cork trim and square it into shape, and cut it up into the sizes required, and ready for cutting into combs, which will, of course, be done in the manner described before. These combs should in the first place be quite as thick as the cork will allow when trimmed and made level, in order that when the teeth get worn the edges may be again squared and the teeth re-cut, thus economising the cork to the fullest extent. The cork comb when properly cut makes excellent work, clean, sharp, and distinct, and yet leaves a glaze of colour on the lightest parts sufficiently strong to show the figure or markings. The importance of good combing cannot be over-estimated in imitating oak, and we have no hesitation in saying that no oak graining can be considered good work except the grain is well imitated. Many grainers scarcely pay any attention at all to the combing, and seem to think that it is but of secondary importance. They are quite content if the figure is only shown strong enough, and some in fact do not trouble to comb the work at all, but lay in a dark graining colour, and just stipple it or streak it with a duster, and then wipe out the figure, which style of figuring as a rule stands out so strong and positive that it is the first thing one sees in going into a room; and on outside work it can be seen across a wide street. Now we consider this class of work as utterly opposed to good taste, and vulgar in the extreme, and we are inclined to think that it is this staring vulgarity so evident in much of the so-called oak graining that has brought the art into such ill-favour with men of good taste. This need not be so, for it is quite as easy and will occupy just as little time to execute it in such a manner that it will be as quiet and in as good taste as if it were the real wood, which is never out of place or out of harmony with its surroundings. On this point, however, we shall have something further to say in a future article.

(*To be continued.*)

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BUILDING NEWS SKETCH BOOK.

ST. MACHAR CATHEDRAL.

THIS cathedral, now used as the parish church of Old Aberdeen, is a very good example of the severe style of architecture necessitated by the obdurate nature of the building stone found in the district. It has a peculiar interest as being the only cathedral built of granite in the United Kingdom. Unfortunately, the nave, two western towers and south porch, are all that remain of the original structure; these were erected at the cost, and during the episcopate, of Bishop Leighton, 1422—1440. The short spike-looking spires, which are of freestone, were added by Bishop Gavin Dunbar about 1520. He also decorated the interior of the nave with a fine flat panelled ceiling of carved oak, containing 48 heraldic shields of kings, earls, and bishops of the period. The decayed parts of this ceiling, and the inscribed frieze, have recently been restored and re-illuminated in their original style. The large seven-light window in western front has just been filled with a stained glass memorial to George, fifth and last Duke of Gordon; and several other restorations, both external and internal, mural and decorative, are being carried out by a local committee, under the advice of Mr. G. G. Scott.

J. Malcolm.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. ZERFFI delivered his thirteenth lecture on this subject at the Kensington Museum on Friday afternoon last. In this lecture he entered into what he called Greek architektonic art, or architecture in detail. There could not be the slightest doubt, he said, that the Greeks were the first who had in reality succeeded in bringing down to first principles the products of architecture, and in so doing they had evidenced a capability of creating real works of art. They surrounded space (and that is what every architect has to do) with walls, and in this they succeeded to the utmost, firstly, because they were able freely to choose their material; secondly, because they were capable of bringing that well-chosen material into beautiful and symmetrical forms; and thirdly, because they were always erecting for a certain purpose. In these conditions are included all the elements of a good building. In the beginning the Greeks used sandstone. After alluding to the use of travertine, the lecturer proceeded to say that in course of time the Greeks, as well as the Romans, used white marble. Next in importance to stone as a building material with the Greeks was wood, but by degrees wood vanished altogether, and it is only to be traced in the ceilings of the buildings, although even for ceilings it ultimately ceased to be used, as in the Athenian temples, where the roofs were of stone. The ceiling of the Temple of Ephesus was of cedar wood. The Greeks also used other materials, such as clay, chalk, and gypsum and marble dust, which they ground as stucco and called κονιασις. Metal formed a very great element in the construction of the temples, as many of the ornaments are traced to have been of bronze. Dr. Semper went so far as to say, in his "Art History," that the Corinthian capital was not the newest form of Greek architecture, but was as old as the Doric, and it originated in metallo-teknic. As far as especially the decorative forms of the ornamental *motif* of the Corinthian capital goes, it was quite reasonable to assume that before the people learnt to carve the ornament out of stone or marble they had executed it in bronze. This supposition, said the lecturer, was not unreasonable, although he did not think it correct. Certainly there was plenty of bronze work in Greece at an early date, such as swords, ewers, shields, and armour, for such were described by Homer. A proof of this was also afforded by the Corinthian capitals of the Museion at Alexandria, which were of bronze, while the pillars were of white marble. The upper part of the acanthus leaves were of gilt bronze. Seeing that the Greeks used all the four principal materials of art—*i.e.*, the plastic, the elastic, the pliable, and the solid, we might investigate Greek architecture in all its fundamental principles. In every kind of artistic building we had two lines, the vertical and the horizontal. The use of these lines was well known to the Greeks, and they also used the curved line and the plain; this was especially the case with the cylindrical or conical columns. The great secret of the success of Greek structures consisted in one single condition—symmetry. The Greek always knew how to arrange the parts so as to bring about a beautiful total. The lecturer impressed upon his audience that they must not allow themselves to be led so far as to think that there was a kind of prescription in that symmetry, and that they must always have one and the same symmetry. That was a great mistake, and would only make the students who committed it copyists instead of self-thinking artists. They might vary that symmetry in an unlimited degree, but they must start from a certain unit. When they knew how to group around that unit, and how to produce a symmetrical building, they would succeed in that in which the Greeks so highly excelled. In speaking of the order or style of a building, the student should clearly understand what was meant by each of those terms. Many authorities said that order and style were the same—were synonymous and convertible terms—but he (the lecturer) denied the correctness of this dictum. "Style" was subjective, "order" objective. "Order" was fixed upon by an unlimited number of artists, who all followed one order. The artist working subjectively with the order created his own style. Of "orders" there were in reality but three, but there were innumerable styles. The artist should not bind himself in any way to a special "order," but in carrying out the order should create a style of his own. Speaking of proportion, the lecturer went on to say that whenever anybody told an artist to keep to proportions he told him to be as free as possible, because the artist himself had to settle what the proportions should be. Greek art was founded on beauty, and that beauty it found in freedom, however regulated by order and law, and that is everywhere the case in art. As in the Greek mythology there could be distinguished three principal orders of gods and goddesses, so the Greek architecture was divisible into three principal divisions or orders. All architectural elements are of a geometrical origin. In architecture something has to be supported and encompassed by forms, and a kind of union has to be secured between the members which support and those which are supported. As soon as a man knows how to do this he is a perfect architect; all the rest of his work is mere ornamentation. There is nothing which is more beautiful for support than a column, because it has a beauty perfect in itself, and embodying as it does the dynamic force, it gracefully interposes between the base and the plinth or architrave, representing the static element. This was most energetically expressed in the Doric order. The Ionic order was less pronounced in this respect, and the Corinthian order still less. The echinus of the Ionic capital might be cut away without any loss of even *apparent* support, but that was not the case with the Doric column. The capital of the Corinthian column was long-bodied and tapering, leading to the impression that behind it or inside of it there must be a very strong support to carry the superstructure. The Ionic capital evidenced a departure from correct principles, and this was still more the case with the Corinthian capital. The lecturer then proceeded to classify the styles in each of these three groups. Firstly, with regard to the Doric, there could be traced six different styles, viz.: (1), the so-called Proto-Doric style, in which the columns were sometimes square; (2), the Lax Archaic Doric style, of the seventh century B.C.; (3), the Stern Archaic Doric style, sixth century B.C.; (4), the Pure Doric style, fifth century B.C.; (5), the Attic-Doric style, under Pericles, a mixture of Ionic and Doric, fifth century B.C.; and (6), the Macedonian Doric style, four centuries B.C. To talk of all the different styles merely as "Doric" was incorrect and ambiguous. In the Ionic order there were three distinct styles:—(1) the simple form; (2) the richly-ornamented form, as in the temple of Polias; and (3) the compound forms, in which the Doric and Ionic were combined. In the Corinthian order we were capable of distinguishing four distinct styles, viz:—(1) the yet undecided form, half Ionic, half Corinthian, as in the temples of Phygalia and Didymæon and the Choragic monument of Lysicrates; (2) the firm settled ornament, when the two rows of acanthus leaves had been well defined, and when there was no mixture; and there were further variations (3 and 4) in the Corinthian order, in which there were additions of trophies, winged horses, and dolphins and eagles; this was especially the case with the latter part of the Roman Corinthian architecture. Each of these orders was capable of any amount of variation to combine with the two others. The great variety of style has been the result of this triple union. The artist could avail himself of a variety of forms, and was not tied down by Vitruvian canons, by architectural guilds, by building committees, or by boards of works. He was perfectly free in the choice of his site, and that was of the highest importance. According to the nature of his site did he design his building, the treatment of designs for a building amidst rocks, trees, or on plains varying considerably, in order that the view of the building might be beautiful and harmonious from any point. Of course in a large city with three millions of inhabitants the architect could not always choose his site, but much more might be done in the selection of good sites by the Government, and municipal and other coporations, for their important public buildings. The site once selected and the order settled, the architect entered with all his heart into the execution of his work, developing a style of his own as he went along. He was untrammelled by any prescribed laws, such as are now educed and slavishly imitated. All the refined cadences, from the primitive Doric to the latest Corinthian, gave scope to the artist. Referring to the caryatides of the Erectheum, Dr. Zerffi said that there was nothing elegant in such a design, as the Greeks themselves must have perceived, for it was only in that building that this Asiatic-like notion was embodied. Respecting the leading characteristics of each of the three orders, the lecturer said that in the Doric order proportion was pre-eminent, while symmetry was the pre-eminent characteristic of Ionic, the predominant quality in the Corinthian order being eurithmy. Although he had attempted to classify the various styles of the three orders, he would say that in all such classifications narrow-minded pedantry should always be avoided, lest the power of the artist's imagination should be checked, and fettered down to outward forms which he was afraid to break, and thus art would be hindered instead of promoted. Various fanciful theories had been laid down as forming a sort of royal road to the excellence attained by the Greeks in architectural design, but when carried out practically they had all resulted in failure. The lecturer concluded by explaining the inferences deduced from the triglyphs and other features of the Greek temples that such structures must have been formerly executed in wood, and by expressing his dissent from certain far-fetched theories of archæologists, such as, for instance, that the spaces between the triglyphs were formerly windows.

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The contract for the construction of the new docks and the extension of the canal near Sharpness has been let to Mr. George Wythes, of Bickley Park, Kent.

ON THE MODES OF DECORATIVE TREATMENT ADAPTED TO VARIOUS MATERIALS.*

(*Concluded from page* 46.)

CAST-IRON

MAY be considered, for art purposes, an abnormal material; yet its extensive use obliges us to consider what rules should guide our treatment of it. We must regard its conditions as somewhat similar to those of bronze, without the latter's capacity for high finish. The coarse surface resulting from the casting is destructive of delicate detail, nor does it readily admit of sufficient finish. The character of the detail must therefore be regulated by the nature of the surface as it comes from the mould, and should be adapted to the requirements of castings. If these conditions are carefully studied very satisfactory results may be obtained. It is only when cast-iron affects to imitate wrought-iron or some other substance that it fails, disagreeably, to take its right place as a valuable material.

BRONZE

may perhaps be considered as occupying the foremost place among metals for purposes of art. Its close texture admits of the highest finish, resulting in softened high lights, the most favourable for the display of surface form. It therefore lends itself admirably to either delicate or vigorous relief. The effect of the relief is often heightened by the brightness of the metal, where its prominences are subjected to abrasion. Although, like cast-iron, it is turned out of a mould, it differs materially in more than one respect. It has not the hard, brittle nature of cast-iron, but, on the contrary, is, to a certain limited extent, ductile and elastic—qualities which enable its treatment to resemble more nearly that of wrought metal when such is deemed desirable. But beyond this it is admirably adapted for receiving finish at the hands of the chaser, who may expend upon it, with advantage, almost any labour or care that the size or nature of the object admit of. Perhaps no material is so effective in work both small and large. From the great gates of the Florence Baptistery to the minute medallions wrought by Japanese artists, bronze seems equally to lend itself to the object, and equally to satisfy the just requirements of art. In the latter instance it has received the highest conceivable finish, in the former only so slight a finish as the large scale and exposed situation require. But in all cases, whatever the size of the work, the plain surfaces should be carefully finished, so that the spectator may recognise the fine texture and beauty of the material. For the same reason, the contour of mouldings should be refined, and should be relieved by acute arrises or fine fillets. True, the dark colour makes requisite deep cutting or bold modelling where emphasis is necessary, or where the parts are in shadow, but even here coarseness must be carefully avoided, and the sharpest finish given to all edges. A dull, blurred edge is destructive of metallic effect, and herein lies one of the leading causes of failure among our London examples of bronze statuary. One and all, they never get beyond the clay in which the model was designed. Turn from these to such works as the equestrian statue of Colleone at Venice, or the great kingly figures which stand round the tomb of Maximilian at Innsbruck. Full-sized copies of these are in the Crystal Palace. What a contrast! I defy the idea of plastic clay ever to enter one's head when regarding these examples. Apart from the magnificent vigour of their design, there is a *metallic finish* about them, bold though it be, from head to foot. Sharp edges are preserved, both in outline and detail, giving an unmistakeable sparkle and spirit to the whole, which would be entirely lost were the sharp lights rounded down or "smeared" away as we see them in Trafalgar-square examples. Can anybody point to a single London statue (save that of Charles II.) which might not just as well have been cast in iron as in the exquisite material of which it displays such a profound unconsciousness on the part of the artist? Take our most recent and most valued acquisition—the Nelson lions. Where do we find the spirit of bronze? Where are the crisp bright lights and the sharp deep cuttings, or the silky gleam of surface, which all speak of metal? Not in the mane, assuredly! Yet how valuable would have been the bright streaks of light in explaining the intended object! Look at the paws; how innocent of everything but the marks of the tool, *not* with which the bronze was finished, but with which the clay was moulded—all too faithfully reproduced in the casting. Had they been of terra-cotta, these modeller's toolings would have been well; but when we are working a valuable metal, the wretched sand or clay which we may happen to use in the process should be unknown to the spectator. It is *not* the ready but "smeary" moulding tool that should be evident to remind him that this is but a costly reproduction from a baser model, but it is the sharp file and keener graver the skilful handling of which he is to recognise. It is the *ultimate* work, the finished, hard, gleaming metal which is to show the artist's hand. The clay, and all that belongs to it, have no more business to be seen than the painter's lay figure. Herein lies the gist of all that I am trying to say, and, half against my will, I have selected this example (the noble design of which I thoroughly appreciate) precisely because its excellences are apt to lead the student to forget its defect—material ignored.

In such bronze objects as include the use of mouldings, these should, as I have already said, present fine profiles. By this I do not mean that the actual size of the mouldings need be limited, but that the flow of the lines should be such as to present gradual and softened curves where broad lights are required, the edges being kept sharp and the shadows dark and well-defined. To this latter end we often find in the best works the moulding highly concave on its underside, by which means the broad sharp edge is brought sharply against dark shadow. Examples of this are frequent among the elegant candelabra and other objects found at Herculaneum and Pompeii. We may also observe in these works how the mouldings are here and there wrought to an extreme tenuity, thereby assisting the eye to recognise the tough strength of the metal. Occasionally, too much delicacy is given by the occurrence of very very fine fillets—mere threads—upon the profile. For examples of excellent treatment of ornamental work in bronze on a large scale, we may take Allesandro Leopardi's grand standard sockets at Venice. In them we find the boldest treatment of contour or form combined with a masterly finish of the details. Modern French sculptors and artists have well studied the effects of bronze as a material, which, indeed, may be considered the one which of late years the French have most completely made their own, simply because their artists and workmen are at the trouble of studying their material, and adapting the nature of the treatment to the due expression of its character.

PEWTER.

Before passing to the precious metals, we may pause for a moment to consider that exquisite works have been produced by François Briot, and others, in so common a metal as pewter. So ductile a material is of course very readily répoussé, and the subsequent chasing is much more easily executed than in the harder metals. Lead or pewter is used for the finished models from which the smaller kinds of ornamental detail are cast in brass or bronze. These models are often far more beautifully finished than the greater part of the work cast from them, and there can be no question that these substances offer great facilities to the artist. The drawback is that their softness renders them very liable to injury, so that it becomes a question whether the harder and more valuable material does not more than repay the additional labour which it demands.

SILVER.

In silver we have a material which, apart from its intrinsic value, possesses many qualities valuable to the artist. It is far more ductile than bronze, and at the same time has natural hardness sufficient to resist any ordinary risks of wear. This hardness may be increased by alloy. In addition it is exceedingly durable, and admits of the highest finish. It is also open to two distinct methods of treatment, which may be used separately or in combination. If polished or burnished, its whiteness and strong high lights preclude delicate work in the detail; at the same time, these qualities result in inconceivable splendour of effect when boldly treated, especially in objects which are made to depend upon form in such a way as to exhibit the burnished surface to advantage. Bold bossed work is very effective, and may be used with excellent results either alone or in combination with engraving or répoussé relief. A matted ground is then valuable to the latter. Engraving, to tell well on bright silver, must be pretty boldly executed. The lights are otherwise lost in the overlapping reflected rays of light shed from the surrounding surface. For art purposes, the most favourable form of silver is that known as "oxidised," in which the extreme whiteness and brilliancy of surface are subdued. It then possesses the finer qualifications of bronze in a higher degree, and the light gray colour which it presents, together with the fine surface and softened lights, render it the best of all materials for delicate and highly-finished relief. In fact, the chasing may be as fine as the artist can bestow, nor need we fear that his labours will be lost. Many valuable modern works have been executed in this country, though by foreign artists, and some excellent reproductions have been made in *facsimile* by the electrotype process. The most beautiful modern specimens of répoussé silver, however, which I remember, were exhibited in 1867 by Faunière, of Paris, who, in a table service (said to have been designed by an amateur for his own use) combined excellence of form and design with most admirable treatment in execution. It is satisfactory to find that one of the English artisans whose reports were published by the Society of Arts appreciated the remarkable excellence of the works from this *atelier*. "Other exhibitors," he says, "show some good pieces," but in Faunière's case "I think it is impossible to discover one piece of inferior work, while many are real master-pieces." "Party-gilding" and "damascening" may both be used on dull silver with good effect, the main point to care for being to avoid confusion. Engraving may be used with both, and if the surface is not polished, may be as fine or as elaborate as may be desired. A hatched or matted ground, judiciously used, often adds greatly to the effect of low relief, or may sometimes be used to show a flat ornament with engraved outline.

GOLD,

the most valuable and the handsomest of natural products in general use, is, by reason of its powerful colour and strong lights, not very favourable to the display of delicate modulations of surface. In large objects, highly bossed work, bold relief, or low relief set off by a mat ground, tell well, as also does engraving, whether fine or bold. Whilst possessing great strength and tenacity, it is extremely ductile, and in its native state bends very readily. These qualities sufficiently account for the extent to which the ancient and oriental goldsmiths used fine twisted wire in the ornamentation of their jewellery. Angular or very sharp sections are not desirable, the latter giving a steel-like character to the subject; whilst thick, square edges have a "strong" effect. Slightly rounded edges and tolerably bold profiles seem best to suit the characteristics of gold. Very thin sharp edges seem to detract from the value, and look poor. Very fine reliefs, rising abruptly from its ground (as the wire ornament already mentioned) always tell very happily in gold, because, although ever so delicate, it provides itself a fine outline, and this is what gold always seems to demand. On this account répoussé work in plain gold must always rise more suddenly from its ground than would be necessary with bronze or dull silver; but being once provided with this natural outline, the execution of the raised work should be rounded and soft, not abrupt and angular. Anything like abrupt contrasts of light and shade will detract from the effect of work in gold. A certain *repose* is essential to the solid beauty of the material, so long as we are depending on the gold alone. If, however, we are merely using the gold as a setting for some more precious object (such as jewels), the rule may be modified. So far I have been speaking of gold having the fine dull surface natural to it in its native state. For almost all art purposes this has the most agreeable finish. At the same time we must not ignore the burnisher, which, when used with judgment, may produce excellent effects by contrasting the bright and dull surfaces, and so giving special emphasis to certain parts of the design. Burnished gold alone has rarely so good an effect. Gold has the peculiar property of harmonising colours. It does so to an extent that only those who have tried it can believe, and at the same time clears and purifies each colour it surrounds. Precious stones are therefore always seen to advantage in a gold setting, and both they and coloured enamels may be used to give point to a design, even where they are only employed with the secondary intention. From gold to

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* Read before the Architectural Association on the 13th inst. by Mr. J. D. CRACE.

GILDING

is an easy transition. Gilt metal may be considered as, in the main, subject to the same rules as gold; but the same delicacy of treatment and high finish are not demanded. The relief must always be strong enough to clear itself, unless it be assisted by the burnisher, of which a more free use may be made. Gilding on wood, or other similar material, may be made more or less effective by judgment in execution to a far greater extent than would at first sight appear. The judicious or injudicious diposition of the burnisher may make or mar the whole piece. Surfaces which are much cut up should never feel the burnisher, which should be confined to such parts as present evenly-rounded or flat surfaces. The burnished parts should always be so placed as to assist in expressing the design. Carved surfaces should be in dull gold, care being taken that the "preparation" does not smooth away all the spirit from the work. When only a portion of the object is gilt, and the remainder shows wood as its material, I prefer that the gilt parts should also exhibit the texture of the wood.

FLAT SURFACE DECORATION IN COLOUR.

The same rules which we have been applying to the treatment of ornament in the solid apply in a different way to the coloured treatment of various surfaces. Here, similarly, the eye must be judiciously led to forget the imperfections of the material where it is imperfect, or to follow its excellence if it be excellent. A rough or irregular surface of wall must, in the first place, be absolutely without gloss, and its decoration must then be so carried out as to lead away from the considerations of surface. Continuous straight lines or fine curves are to be shunned, nor is delicate finish desirable. A certain breadth of effect and execution must be maintained, and the forms of ornament selected must be such as not readily to betray the slight distortions caused by uneven surfaces, but to lead the eye to follow the intention of their own forms. On the other hand, where the wall presents a singularly fine and perfect surface, this may be done justice to and explained, firstly, by making the coloured ground carefully even in tone and texture. It may even be thought desirable to maintain a slight gloss, but this must not be excessive. Fine details and strong lines may be used to any extent required, and the finish need only be limited by the skill of the artist. In this, however, a distinction must be observed as to the execution of those parts which are mere ornament and those which partake rather of the nature of pictorial art. The former are intended to add to the general effect of the room or building, and should therefore be executed in such a manner as to explain themselves and answer their end when viewed as part of the whole. However finely executed, the lights must be sharply preserved, and not toned off too gradually to the shades. A certain crisp solidity of touch, with a precision of intention, are indispensable, though they need never become obtrusive. I cannot do better than point to the decorations of Pompeii for examples of the execution of decorative ornament on a fine surface. When, however, pictorial art is introduced, I am far from desiring to limit the finish or to dictate the style or method of execution. The artist will, of course, comply with the condition that the general tone of colour and force of effect be such as to harmonise with the rest and assist the general result. Having done this, it remains with him alone to decide whether his work shall be most admired at a distance of one yard or five yards. It occupies the position of a gem in a fine setting, and invites admiration on its own account as well as by adding to the value of the whole. Yet, even with this freedom, the painter who has never painted for any surrounding but a gilt frame will find that he has much to learn before he can satisfactorily ally himself to the architect.

STAINED GLASS.

We have been considering how far the treatment of coloured ornament may be varied to meet the necessities of the surface to which it is applied, the variation being rendered necessary by the way in which the light, falling on those surfaces, affects the appearance of the ornamentation, and *vice versa*. We have, however, in stained glass windows, coloured ornament applied under totally different conditions. In wall treatment we had to *explain the surface*; but here we have nothing to do with surface, of which the eye can take no knowledge, the light being transmitted. It can, however, take note of outline, form, and colour, therefore especial care must be taken in respect of these elements of beauty. The leading forms must not only in themselves be pleasing, but must be so clearly defined as to be distinguished, in spite of the flood of light which pours through, the rays of which spread and overlap each other. But it is in dealing with the question of colour that the treatment of stained glass is really put to the proof. We have not only to arrange our colours harmoniously, but to make the most of our beautiful material. It is in the jewel-like appearance and play of colour that the great charm of stained glass lies, and our study should be to enhance, as far as possible, this special beauty. If we observe carefully the most admirable works of the old artists in stained glass, we shall find that one important means to their success lay in the skilful use which they made of the irregularity of their material. *With colours obtained by transmitted light, those are richest which vary most in depth.* This is an axiom which workers in translucent material (be it glass or enamel, or what not) should never forget. It is their first condition of success. Such homely illustrations as a decanter of claret, or a spoonful of currant jelly on a white plate, will explain my meaning as well as any. If the wine were in a flat vessel of uniform depth, the colour would be there, but half its rich play and flashing glow would be gone, for it derives these from the varied diameter of the vessel. So with the jelly, the colour of which is displayed (as in enamel) by the light reflected from its ground, the plate. If spread in an even coating, the colour is still beautiful, but the rich palpitating effect is no longer there. In large surfaces of one colour, the masses should be made up of several pieces of varying depth. In small spaces the varied thickness of the glass itself must be depended on. And where, as in a border, the same colour is repeated to a considerable extent, so far from matching each piece to the other, the skilful artist will seek how to *vary* them with most effect. Many of our best glass artists are well aware of this, but until the workman himself appreciates and understands how thus to give value to his work by studying his material, advance will be slow. Still, in knowledge of their material, the English stained glass workers of to-day surpass all their foreign rivals. Whatever excellence of pictorial design the much-vaunted "Munich windows" may possess, they betray absolute ignorance of the treatment of material. They are mere transparencies, and but for their greater (almost unfortunate) permanency, might just as well be painted on oiled canvas as on glass, of which they exhibit not a single characteristic. (Applause).

CONCLUSION.

We have now glanced at several of those meterials which are in most general use for the purposes of art, especially of such arts as are most closely allied to the architect. In thus rapidly surveying the leading peculiarities of each material, I have endeavoured to point out that, although much may be done in *design*, much also remains in the power of the artist or workman under whose hands the crude lifeless material is wrought into the living treasure. It lies with him, not only to do justice to the conception of his own art in his own brain, but, in so doing, to seek for all the assistance and all the power of expression which he may derive from the substance which he has selected from the rich gifts of his mother earth.

A discussion ensued in which Messrs. Potter, Phené Spiers, H. W. Lonsdale, Lewis F. Day, Stannus, and J. G. Crace, took part, and the thanks of the Association were tendered to Mr. Crace for his instructive paper.

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THE OLD AND NEW GENERAL POST-OFFICE.

THE "old and experienced official in Her Majesty's Office of Works" has, in the additions to the old Post-office, and in the design for the new building now being erected opposite to it, given us an idea of the amount of respect paid to the existing works of *architects*, and also the art quality of the productions to be expected under the Ayrton administration of his department; we say *respect* for the works of architects, because it is pretty generally understood, outside the Office of Works, that this is due from an architect when he has to make additions to, or alterations in, the work of a predecessor, and when that predecessor happens to be a man of the architectural "calibre" of Sir Robert Smirke, we should have imagined that "an old and experienced official" would not have disregarded such a rule; as an illustration, he need have gone no further than Somerset House to have witnessed the attention paid by Sir James Pennethorne—consistent with the requirements of the new additions—to the work of Sir William Chambers, the result being highly creditable to Sir James, and at the same time in harmony with the old building. We, of course, are not comparing the two as regards magnitude, but this first work under the—we may say—new system should not pass by unnoticed.

Externally the new addition seems to be central with and set back from the portico of the old building, and is higher than the top of the pediment, and consists of an erection presenting to the front a plain face of *cement work* with sloped sides, coped with stone, forming the gable end—we may term it—of the addition, which has side lights and seemingly skylights below; the two sloped sides of the end do not even agree, and there is an entire absence of intention to make the new work harmonize with the old. The face work of *cement* is certainly inexcusable. As a roof to an isolated workshop the work would be passable, but here the result is a spoliation of the dignity of the building by no means creditable to the "experienced official." A good view of it may be obtained from the corner of Newgate-street and Aldersgate-street, and we recommend our readers to visit the spot and see with what care our important buildings are treated.

As regards the new building, judging from the design as published by a contemporary, it is beneath criticism. We challenge the most observant critic to point out throughout the design one particle of originality, excepting, perhaps, the absurd rustication of the central columns supporting those of the pediment above; the design of the central door, of which a detail is given, is disgraceful, and the whole, omitting the central feature, might, perhaps, pass for a row of second-class dwelling-houses; but as a design for an important public building, is an insult to the art architects of the period. W. W.

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SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.

ON Thursday evening, 19th inst., the thirteenth session of this society was inaugurated by a *conversazione* at the Suffolk-street Gallery, Pall Mall, which was kindly lent for the occasion by a the Council of the Society of British Artists. The Society for the Encouragement of the Fine Arts was founded in December, 1858. Its objects are indicated in its title. Through its agency, a point of agreeable re-union between the artist and the amateur has been established, where their mutual interests may be made known and cared for, and the principles which should regulate the arts in their important mission discussed and disseminated. The scheme of the Society, so far as it has been developed, includes exhibitions of works of art, when papers are read and discussions take place upon questions of art; lectures on all branches of the fine arts, when discussions are invited; and *conversazioni*, with performances of vocal and instrumental music. The opening *conversazione* was very numerously attended. In the course of the evening, Dr. Heinemann, professor and lecturer at the Crystal Palace, delivered an address on the principles and objects of the Society, and a well-selected programme of vocal and instrumental music was gone through, under the direction of Mr. Alfred Gilbert, the hon. musical director of the Society. The choice specimens of art upon the walls of the various rooms comprising the gallery of the Society of British Artists were not the least attractive features of the evening's proceedings.

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ART AND ITS BELONGINGS.

ART and its belongings, says Mr. Mnckley, head master of the Manchester School of Art, require to be brought repeatedly before the notice of the English public, more than any other department of education, and if we are to succeed, it is necessary for assurances of its value to be insisted on continually by those who understand it best. The love of the beautiful in Art has yet to be recognised amongst us as one of the subtle and for the most part hidden instincts of our nature, and to those who can cultivate it from proper motives new and continuing sources of delight and happiness it will bring as a reward.

With the earliest people of our species, Art instincts and a yearning beyond the bare wants of the flesh have always been manifested in a most extraordinary way, and the expressions of Art feeling which they have evinced in divers forms have been of a perfect kind, seldom erring either as to quantity, form, or colour; and just as the bird selects the never-varying materials to build its beautiful nest, with a knowledge of which we know nothing, just so was it with the earliest tribes of our race—the necessities of existence and the useful were certainly the first things for their consideration, and then the ornamental.

In his migratory movements, the rudest appliances to propel the canoe of the savage were first invented, and as soon as this condition was met, he carved a thousand beautiful devices on his boat oar. In search for food in the chase, he handsomely decorated his weapons, and the handle of his hunting knife was ornamented in a perfect manner and according to the highest instinctive expression of his nature, but not until he had killed and eaten.

And so it is, I am willing to believe, with regard to our own position in the present era; the necessity for the useful up to a very recent period has been the all-absorbing theme, and that we do not as a nation repudiate the real and living worth of the beautiful I am convinced, but on the contrary, I feel certain the time has now come when this country, individually, will desire a full development of the higher instincts of our being. The manifold form of its seekings may perhaps be vague, and to many appear unmeaning; nevertheless, I do feel it is in your power, and in the power of a few others in this city, to lead forward the cause of Art, to raise the standard of its appreciation as connected with the various branches of industry under our control, and the familiar objects intended to be in and about our dwellings: in short, to weave the golden thread through the lives of those with whom we live, and for which their children's children will thank you.

THE FOUNDATIONS FOR THE NEW LAW COURTS.

The following tenders have been received for the foundations for the New Law Courts:—

Gammon & Sons	£68347
Holmes & Nichol	66900
Lucas Brothers	65719
Myers & Sons	57435
Lee & Sons	56500
Taylor Johnson & Smith	54240
Markwick & Thurgood	49000
Holland & Hannen	48300
Kirk	48182
Webster	47500
Cubitt & Co.	46555
Brass	46240
Trollope & Sons	45473
Perry	44973
Browne & Robinson	44680
Hill, Kiddel & Waldram	42750
Higgs	41987
Henshaw (too late)	38350
Axford & Whillier	37175
Dove Brothers	36755

Certainly tendering must be a game of chance. In fact, it looks as if it were as bad as betting. It will be seen by the above that there was only the trifling sum of about £32,000 difference in estimating for the foundations of the Law Courts.

Building Intelligence.

CHURCHES AND CHAPELS.

Boscastle, Cornwall.—Minster church has just been reopened, after a general restoration under Mr. St. Aubyn, architect, of London. The galleries have been removed, and low free seats have taken the place of the former high pews. The pulpit has been removed to another position, and the harmonium and singers placed in the chancel, which has been restored at the expense of the rector, while the general restoration of Minster church has been effected at the sole expense of the lady of the manor, Miss Hellyar, to whom also belongs the advowson and patronage of the livings of Forrabury and Minster. Mr. Burt, of Launceston, was the contractor.

Edinburgh.—A new oak reredos has just been erected in St. John's, Princes'-street. The design consists of a centre portion above the altar, and two side pieces connecting the centre with the east pillars of the nave. The centre portion is about 8ft. in height above the super-altar, and 7ft. long, and is formed of three richly-traceried arches, each flanked with an elaborately moulded and panelled buttress, and finished on the top with a deeply carved and moulded cornice and open cresting. The buttresses are carried through the cornice, and terminate in gableted and crocketted pinnacles. The three panels within the three arches are at present covered temporarily with red cloth, corresponding with that of the altar below, but it is intended that they shall be filled in with an ornamental design of some kind, probably on a dead gold ground, and it is contemplated also to bring out the leading lines of the design by gilding, as was done so successfully with the traceried ceiling of the nave. The work, which has been entirely executed in solid American oak, has been carried out by Messrs. Davidson & Read, of Frederick-street, from the designs of Messrs. Peddie & Kinnear, architects.

Farringdon, Devon.—The parish church has been entirely rebuilt from the designs of Mr. W. White, F.S.A., of Wimpole-street, London, and was consecrated by the Lord Bishop of the Diocese on the 14th inst. The parish is a small one, containing little over 300 inhabitants. The style of the building is transition from First to Second Pointed, and consists of chancel and chancel aisle, nave and north aisle in three bays, the easternmost bay being carried out transeptally, a south porch and western tower, with an oak shingle spire capable of receiving four bells, but at present there is only one. The spire is surmounted by a large vane. We believe there is only one other shingle spire in Devonshire, that at West Worlington. The walls are built of local stone, with Ham Hill dressings, and the interior is lined with brick. A good deal of the Beer stone of the old building has been used and mixed with the Killerton stone; it has a very good effect. The roof, which is an open deal one, is covered with plain tiles. Accommodation is provided for 150. Chairs are provided, and the floor underneath them is composed of wood blocks, on a principle of the architect's, and as adopted latterly by him at Lankey Church, near Barnstaple. In the passage up the centre of the nave, the old mural stones that were in the ancient building have been again laid down, but they are lined with ornamental tiles. On the chancel floor Minton's tiles of considerable richness have been laid. The chancel is lighted by three stained glass windows, the gift of the Ellacombe family, which has long been connected with the parish, as the monuments on the walls testify. The east window is a three-light one, and represents the Nativity, Crucifixion, Resurrection, and Ascension. This window is the gift of General Ellacombe. The other two are small two-light ones, and are placed on the south side. Ward & Hughes of London supplied them. The choir stalls are of oak, as also is the pulpit, which is raised scarcely 18in. above the floor. The altar is formed of a panelled front, with detached shafts carrying a massive marble slab, over which is a marble cross. The old Norman font, which was very much dilapidated, has been carefully restored. It is Late Norman in character, and the restoration has been carried out in accordance with the fine example of a similar date existing in S. Mary's Steps Church, Exeter. It has a massive oak cover, which is new. There is a little stone carving upon the building, which, as the meritorious effort of an amateur, deserves a passing mention; it has been executed by the clerk of works, Mr. George Vickery, during his spare hours. Mr. Mayell, of London, was the builder, and the total cost of the work has been about £1,350. The farmers of the parish provided the cartage for drawing the materials free of expense.

Hackness. — S. Peter's Church, Hackness, near Scarboro' was re-opened on the 18th inst., after restoration by Mr. Ewan Christian. Under his direction the galleries have been taken down, all the plaster removed from the walls; the seats, which were narrow and inconvenient, replaced by handsome oak sittings, more conveniently arranged; the old vestry thrown into the church and a new vestry constructed. The ceilings have been removed and open roofs substituted, the roof of the chancel being of higher pitch than before. The wall of the south aisle, being very dilapidated, has been taken down and re-built. In the chancel, an old window which was blocked up has been opened out, and another old window has been restored, and all the windows have been re-glazed, some new ones being inserted in the north aisle. The contractors for the work were the Messrs. Pedbury, of Selby.

Hull.—On Saturday last the new Church of S. Silas, Hull, was consecrated. The building contains sitting accommodation for 660 persons, and consists of nave, with north and south aisles, chancel, organ chamber, and vestry, and is built in the Gothic style of the twelfth century, from the designs and under the superintendence of Mr. Samuel Musgrave, Hull. The church is constructed of bricks and faced with red stocks, with bands of blue Staffordshire bricks, tracery, and other dressings. Ham Hill stone has been used. The interior of the church has Bath stone columns, with moulded caps and bases, and parti-coloured brick arches and stone labels to the nave arcade. The chancel has an apsidal termination, and has moulded brick arch and stone sub-arch resting on bold moulded corbels and shafts of Bath stone, with carved capitals and moulded annulets and bases. The contractor for the whole of the works was Mr. Musgrave, of Hull.

Lynmouth, North Devon.—The new church of S. John the Baptist, now erecting from the designs of Mr. E. Dolby, of Abingdon, near Oxford, is nearly complete, and is expected very shortly to be available for use. The style is Early in character, and the building consists of nave with south aisle, apse, and organ chamber, with porch at north-west corner of nave. There is a bell-turret for two bells on the western gable. The edifice is built of limestone, and the same material is displayed on the inside as well as outside walls. The dressings of the exterior are of Ham Hill stone, and those of the interior of Bath, Ham Hill, and Forest of Dean stones. There is a stone groined roof to the apse, springing off moulded and carved corbels, the roofs of nave and aisle being of open timber. The windows, excepting those on the north of nave, are small lancet ones, with a very deep splay. An arcade of three bays divides the nave and aisle, the capitals of which are somewhat richly carved with conventional foliage. The whole of the floors are laid with Maw's tiles. The stalls are of oak, as also is the altar-table, which latter is raised by a series of steps to some altitude above the level of the nave. The rest of the church is to be seated with chairs, excepting only in the part used by the school children, for whom deal benches are provided. The whole of the work is being executed by Messrs. Oliver and Son, of Barnstaple, at a cost of about £2,000. The carving is by Hems, of Exeter. Mr. Lewis officiated as clerk of works during the earlier part of the work, but latterly the services of a clerk of works have been dispensed with.

Willesden.—Two handsome memorials have lately been erected in the parish church of S. Mary, Willesden, which greatly improve the chancel. The one is a reredos of Caen stone and various coloured marbles, with light open tracery showing the east window at the back, with the words, "Holy, holy, holy, Lord God of Hosts," in gold letters on a blue ground beneath the window. The other is a very rich encaustic and mosaic pavement for the sacrarium. Both memorials are from the designs of Mr. Tarver, architect, and are given by the Mason family and Mrs. Metcalfe respectively.

The Horse Shoe Cloisters, Windsor Castle, —The restoration of this ancient pile of buildings at the west end of S. George's Chapel, Windsor Castle, is progressing rapidly. The herringbone brickwork of the houses, divided into panels by oak beams, will, when finished, present a picturesque contrast to the rest of the Castle architecture. The architect is Mr. G. G. Scott.

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Preserving Wood from Decay.—By the process of Mr. Archibald B. Tripler, of New Orleans, wood is said to be preserved from decay in the following manner:—The wood is cut into two or more equal parts or slabs. These pieces are bored at equal distances to receive the trenails to unite them, and they are immersed in a solution of coal-tar and powdered charcoal, either hot or cold, in equal or unequal parts, which not only thoroughly impregnates the slabs with carbon, but coats the surface with an adhesive material, so that when put together their adjacent sides will adhere together, and form interior partitions or walls of antiseptic or preservative agents, extending from one end of each slab to the other. These slabs are then united with trenails, or double pins, in such a manner as to lock them as firmly and solidly as if they were one piece. The timber thus prepared is immersed in a solution consisting of asphaltum, or mineral pitch, 80 parts; sulphur, 5 parts; arsenic, 5 parts; coal-tar, 5 parts; powdered charcoal, 5 parts;—in all, 100 parts. This solution will cover the surface, and fill up the joints and crevices between the slabs, rendering them impervious to water, and effectually preventing atmospheric decomposition by insulating it from the decaying influences of the elements.

THE USE OF PHOTOGRAPHY TO THE ARCHITECT AND ENGINEER.

THE use of photography to the engineer and architect is not confined to the purchase of photographs, however good they may be. It certainly never can become a substitute for sketching, for the free use of the pencil is all important. Yet, as an aid, it is of great value. "What student," asks Mr. E. L. Williams in the *British Journal of Photography* "could in a week bring home six dozen sketches of details of cathedrals and churches? Yet, on one occasion, working with dry plates in France, I had no difficulty in doing so. From my commencement with the calotype process in 1848, to the present day, the camera has been the companion of my holiday tours, and has often proved of great value in my professional pursuits. That silver prints need not necessarily fade I consider proved by those printed by myself twenty years since being now quite perfect. Some of the most eminent engineers have their works photographed weekly or monthly; and all who saw the collection taken by the Royal Engineers at the late Exhibion in Conduit-street must have seen the great value of such absolutely correct memorials of the resistance of iron targets to shot. I do not pretend to determine the vexed question of dry *versus* wet plates, except to remark that I think an amateur should use both. Each has its advantage and each its inconvenience, and a knowledge of each process should be gained. When weight of baggage is no object, and help is at hand, I prefer the wet process, taking care to use a large roomy tent with a camp-stool. In developing a picture we want our wits about us—an improbable contingency when working in a stifling atmosphere and nearly tired out. A good dry process has this great advantage to the amateur photographer—that he can purchase the plates ready for use, or, still better, prepare them himself in his leisure time. At a favourable opportunity they can be exposed and developed when convenient. The Liverpool Company's dry plates are excellent, but for large pictures I prefer the collodio-albumen process, which with the gallic acid wash recommended by Major Russell in the *Journal of the Photographic Society* for July, 1858, and since often re-discovered—will enable plates to be prepared that I have proved will keep for years.

A preliminary coating of diluted albumen prevents all chance of blistering, and no trouble ever arises from the state of the silver bath. The aceto-nitrate bath used for final sensitising will do for the first bath if many plates are not required, when it is best to use two baths, the first only slightly acid. With care in preparation, and full exposure, the results are certain. No large dry-plate work has yet been exhibited equal to that of Mr. Mudd, Mr. Wardley, and Mr. Sanderson by this process, and large plates are the crucial test of any method.

After many years' experience I can recommend to the engineer or architect wishing to try his hand at photography to master the wet process thoroughly, and then try the collodio-albumen process of Dr. Taupenôt."

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ASSOCIATED ARTS INSTITUTE.—A meeting for discussion was held at 9, Conduit-street, on Saturday evening last, Mr. Andrew B. Donaldson in the chair. The subject introduced by Mr. H. C. Boyes, was "That Archæological Accuracy is neither Necessary nor Desirable in Art." Mr. Boyes maintained that anything which tended to confine the artist within certain limits, and to bind him down to definite accessories, must inevitably weaken and cripple the originality of his art. He would not have him ignorant of archæology, but he would have him prove himself independent of it. Mr. Michael, in reply, said that he could readily refute the arguments of Mr. Boyes by that gentleman's own words. He had admitted that he would have artists acquainted with this study, and thus it became merely a matter of degree as to how far they were to avail themselves of their knowledge. Mr. Michael pointed out further that archæology had been of late years so much popularized that it was a matter of impossibility for an artist either intentionally or ignorantly to disregard it in his works. In the discussion which ensued, Mr. Boyes's opinions were shared by Messrs. Wilson, Day, Redgrave, Ridge, and Donaldson; while Messrs. Phillips, J. F. Boyes, and Hewitt, sided with Mr. Michael. The members present were then called upon to record their votes on the question, and the motion was lost by a majority of one vote.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

RECEIVED.—E. H., S. & Co., W. E., J. R. S., W. & S. & Co., J. P., W. & Co., J. V., J. H. S., E. G. D., J. D., E. P.

SNIDGER.—You are to be pitied. The publication of such a letter would, however, do no good.

W. W. BETHELL.—Apply to Whiteman & Bass.

W. H. B.—More suitable to a Roman Catholic or High Church paper.

J. CALLINGHAM.—We venture to say that the writer of such a letter could not write a good book.

T. ENGALL.—We cannot insert answers to "Intercommunication" questions which are merely advertisements.

GEO. VICKERY. — Your shilling's worth of stamps are handed over to the *English Mechanic* Life Boat Fund.

MONUMENTS OF ART.—You will see that we have given the first of the series this week.

HENRY WALKER.—Drawing at the lithographers.

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Correspondence.

"J. B. F." ON SHARP BUILDERS' CLERKS.

(*To the Editor of the* BUILDING NEWS.)

SIR,—It is gratifying to find that "J. B. F.," in his last letter, speaks with a little more consideration for "sharp builders' clerks," and that he accepts the fact that the public sanction their existence and practice by largely employing them. He seems, too, to be even willing to admit them to the ranks of the profession, provided that they previously prepare themselves for the high honour by "careful study." The scheme proposed for effecting this great change is, to say the least of it, a little hazy, and not easily applied to men who are at present in the enjoyment of a remunerative practice, or to those who have only just commenced the course which gives "J. B. F." such annoyance.

The effort to show that there is no distinction between the professional positions of the lawyer, the doctor, and the architect, affords a very significant illustration of the disease with which the profession is infected. The comparison does not hold for a moment. Issues of such vast and vital consequence frequently result from the labours of the lawyer and the doctor that no client or patient would ever dream of employing incompetent persons. A mistake might be ruinous, perhaps fatal; and in every way their works have a direct responsibility and importance, plainly, and often painfully, perceptible to their employers. The architect can never arrive at this peculiar stage, for the very simple reason that the public consider him as a kind of artist of a business-like character, stripped of the sentimental or romantic associations which usually surround the national conception of painters, &c. His work is not of the kind that appeals strongly to the fears or interests of his client. Even his blunders do not seriously affect his patrons, because he generally succeeds in laying the blame and the cost of them on the shoulders of his builder or contractor. I maintain, therefore, that there is a wide difference between the professions in question; and to prove that my view is the same as that adopted by the public I need only refer to the complaints of "J. B. F." himself. Such a letter as his would be impossible were it otherwise. Architects denounce with much praiseworthy vigour all kinds of "shams;" but the most injurious "sham" in the whole range of architecture is the baseless pretentiousness which assumes to itself a position to which it can never be entitled.

If these "sharp builders' clerks" give uneasiness to the professional gentlemen, let them adopt the tactics of our artists by producing work that cannot be equalled by any amateur or clerk whatever; let them cast aside the conceit which besets them, and look to their own efforts for protection, instead of uselessly waiting for the "legal restrictions" they can never get. When they become wise enough to do this, the beginning of the end of the objectionable "clerks" may be expected, and not before.—I am &c. READER.

KITCHEN BOILERS.

SIR,—In answer to your correspondent, J. W. Randle, p. 56, perhaps you will kindly allow me to make the following remarks. A gas stove at cold-water cistern may keep it from freezing, but may not have the slightest effect in preventing the boiler from bursting, as Mr. Randle justly says. If the expense be not too great, the idea of wrapping felt round the cold pipe going into the boiler, as well as round the hot or expansion pipe coming out of it, is the best. Although these pipes may not be near an external wall, yet they sometimes come in contact with a cold air draught, which in frosty weather may freeze them up at that particular place; consequently, if the water in the boiler begins to boil, the steam is checked in its passage up the expansion pipe, and then the boiler bursts. It is neither a presumed cold stone wall, nor a brick one either, that would disturb me, but the cold air, and especially cold air in motion; which latter will sometimes freeze up a pipe, or rather the water in it, at only a few feet from the kitchen fireplace. A good preventive, if the water be plentiful, is to cause one of the hot-water cranes to trickle a little during the frost both night and day, which by keeping up a slight motion in the pipes does good; only watch that the crane left running is in a position so that no harm would be done by overflow, supposing the waste pipe should freeze. Then, in case the supply pipe to cistern should freeze, felt round it would do good; for if the supply to boiler should cease for some days, then the boiler might dry up and get red-hot at bottom, in which state the water coming on suddenly might burst it. To prevent this, however, whenever the water does not run at hot-water crane the fire ought shortly after to be put out at the boiler. In putting in the expansion pipe of a hot-water boiler, it should always be put in with an incline down to the boiler, so that if the boiler was emptied no water would remain in said expansion pipe. This inclination of the hot pipe is for the purpose of facilitating the passage of the steam up it, which, of course, will help to keep it warm,—I am &c., PLUMBER.

Jan. 21.

ST. MARY-LE-WIGFORD, LINCOLN.

SIR,—I have lately seen a copy of the BUILDING NEWS for Friday, Dec. 30, 1870, which contains an article on the Church of S. Mary-le-Wigford, Lincoln. The writer expresses a fear that the tower of that church is about to undergo rough treatment during the proposed restoration, and as one chiefly concerned in that restoration, I beg to give him "authoritative assurance" that not one stone of the original fabric of the tower shall be touched, the only alterations which it is proposed to make in this part of the church being—1, the removal of the modern masonry which at present blocks up the Saxon arch opening into the nave; 2, the building up of the debased window which now disfigures the west front of the tower; and, 3, the removal of a hideous modern staircase giving access to the ringing-floor, which will in future be reached by a light movable iron ladder.

On two points the writer of this article has been misinformed. He says (1) "No particulars were furnished to competing architects;" and (2) "That it is proposed to add a new north aisle." On the contrary, a printed paper of instructions was forwarded to each architect who applied to me for information; and the proposed new aisle is not on the north but on the south side of the church.

One paragraph of the article, suggesting that the plans which have been chosen were selected simply on account of their cheapness, is a gross imputation to lay against gentlemen of high archæological attainments, of whom I have several on my committee. The plans were chosen unanimously before the estimates of expense were considered. The new south aisle and reseating of the whole church will raise the church accommodation from 270 to about 500 sittings, an allowance by no means too large for a parish which now contains over 2,000 souls. It will be an exact reproduction of the beautiful Early English north aisle, and the windows, doors, &c., in the present south wall will be carefully replaced in the south wall of the new aisle; the latter will, in fact, be merely the present south wall moved some distance further southward.

I will only add that my own wish was to have entrusted the work to J. L. Pearson, Esq., of Harley-street, London, but local circumstances induced me to forego my own inclination. But one word more—the work shall be carried on in as conservative a manner as possible,—I am &c.,

George T. Harvey,
Vicar of S. Mary-le-Wigford, Lincoln.
Lincoln, Jan. 16.

WESTMINSTER ABBEY.

Sir,—Has it been considered what an unsightly blot on the exterior of Westminster Abbey is presented by the restored pier of the most northerly flying buttress of the Chapter-house? Partly hidden from view, at present, by the hoarding, it will be found a great eyesore when that temporary screen is removed, obscuring as it does the lights of St. Edmund's Chapel and obstructing the pathway to Poet's Corner. Given a flying buttress it will be argued that there must be a support; but that support need not rise above the spring of the arched buttress itself. If the buttress itself must stand, at any rate the roofing or companile tower of the pier might be dispensed with.—I am, &c.,

A. H.

January 21.

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Intercommunication.

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QUESTIONS.

[2109] WATER AND LEAD. — Can any of your numerous readers explain the following:—In the cisterns of a house recently erected, and which are lined with the best milled sheet lead, there have appeared several whitish spots on the lead, some on the bottom and others on the sides and standing waste pipes. On these spots being touched with the nail, the lead is found to be quite corroded and comes away in a fine powder, so much so that in a short time the lead will be quite eaten through. Now is this the fault of the water or of the lead? The water is certainly hard, but if the water is the cause why does it confine its action on the lead to spots, and not act equally over the whole surface of the lead with which it comes in contact. Is it possible to adulterate the lead so that the water would act so on the inferior parts of it? I shall be glad if any of your readers can enlighten me on this matter.—Inexperienced.

[2110] LOAD FOR MEMEL TIMBER JOIST.—Will any of your correspondents inform me what would be a fair load for a memel timber joist to carry 12in. deep, 4in. thick, and 17ft. between bearings loaded equally the whole th?—Carpenter.

[2111] CONE OF RAYS.—Will some of your readers kindly give a little information on the following? I am studying Burchett's "Linear Perspective" for the coming examinations of the Science and Art Department, but do not know how to determine the diameter of the base of the cone of rays; I should be much obliged if some one would tell me, as upon that point every other depends. Is the base of the cone of rays given in the examination papers? What kind of subjects are required to be delineated? and can I obtain a specimen of subjects given on former occasions?—Student.

REPLIES.

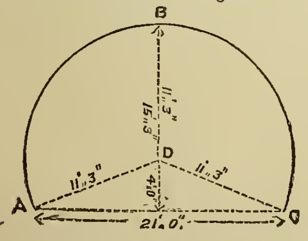
[2068.]—SEVENTEENTH AND EIGHTEENTH CENTURY ARCHITECTURE.—My reply to this query should have read as follows:—"Richardson's Old English Mansions."—P. E. M.

[2078] FENCING LAND.—The County Court judge was perfectly right. As a general rule each owner must take care that his own cattle do not trespass on his neighbour's land. Boyle *v.* Tomlin, 6 Barn. & Cres.—Z. Y.

[2087] ASPHALTE IN CHEAPSIDE.—I am sorry to have to correct "P. E. M.," who has so kindly replied to many unanswered queries; the asphalte was not "heated and applied," but laid on in powdered state and then melted by means of rammers with iron heads heated in a portable furnace close to the scene of operations, only thin layers of the material being applied. This means of application being so different to that generally in use for other kinds of asphalte has induced me to trespass on your space. The same asphalte laid by same means is also in use in Holborn.—J. C. C.

[2095] PREVENTING SOUND TRAVELLING FROM FLOOR TO FLOOR.—Three of your correspondents recommend pugging as the best means of preventing sound travelling from floor to floor. The sound is conducted not through the voice but by the joist. I have tried pugging, but unsuccessfully; I have also added strips of thick felt nailed on the top of joists, between them and the floor boards, but still unsuccessfully. I believe an oak or framed floor to be the only remedy. Dennett arching, a floor composed of iron girders and concrete, appears to be free from this defect.—Thos. Chas. Sorby.

[2097] TUNNEL EXCAVATION. — As "Surveyor" states the section of tunnel to be a segment of a circle, I think the accompanying horseshoe arch must be the correct outline, the area of which (working to the dimensions given) would be about 286·16ft., being the sum of the area of the sector ABCD, and the triangle ADC. Rule to find area of any sector:—As 360° is to the number of degrees in the arc of given sector, so is the area of the whole circle to area of sector. The area of the triangle is so simply found that it would be superfluous to give a rule here. Whenever engaged on earthworks I have always measured to the full extent of excavations.—T. Rashley.



[2098] SPEAKING TUBES.—In reply to "H. H.," I put a speaking tube from a large hotel to the stables (about 200 yards). I used the common 4in. rain water fall pipe under and across the street, made the joints tight with putty; I also put a ½in. lead pipe through it, soldered a whistle on at the stable end, at the other end I fixed a pair of common household bellows. It has now been in use since 1850, and has had nothing done to it but a new pair of bellows, the others being worn out; of course the speaking is through the 4in. pipe.—C. S. S.

[2099] REMOUNTING PHOTOGRAPHS.—It will be found easier and preferable in all respects so rise "face mounts," (viz., thick cardboard cut with a bevel edge to outline of the photograph, the edge gilded or not, in accordance with taste) placed over the present mounts, and covering about 1-16in. of the edge of the photograph; by this means you hide the soiled margins without running risk of injuring the photographs by removal and remounting, and can at any time easily replace the face mounts when soiled, and at the same improve the appearance. Photographs mounted on boards only always have a poor appearance, which is obviated by the means herein proposed.—J. C. C.

[2100] TAYLOR'S PATENT TILING.—This tiling, if laid properly, is capable of keeping out the wet, and should be laid by the company's own men.—L.

[2100] TAYLOR'S PATENT TILING.—I have used Taylor's patent tiles on seven or eight occasions, and in one case at Sheffield, where the tiles were laid by the company, have seen them blow off by the score in a high wind, the fallen debris choking up the gutters and breaking other tiles in their descent. In another case at Brighton, also laid by the company, the wet frequently comes through. I have found them most dangerous things to walk over for any inspection or repair of roofs, &c.—T. C. S.

[2102] PIPES AND SMOKE FLUES.—I have tried terra cotta smoke flues and combined smoke and air flues of the same material, but find them too difficult to fix to be of any service. Few chimneys are straight enough to allow of their use, and to get them into the curves of the chimneys it is necessary to have them cut at the joints, which is a troublesome and expensive process. In the case of the combined smoke and air flues there is considerable difficulty in making a joint sound enough to prevent the smoke passing into the air flue. Perhaps Messrs. Doulton or other makers may be able to give some information.—X. M.

[2104] TEMPERATURE OF DAIRIES.—It is absolutely necessary that means should exist in all diaries for preserving an equal temperature throughout the year; the cold of winter being hardly less injurious than the heat of summer. Care should also be taken to secure a plentiful supply of pure water, effective drainage by which the water may be carried rapidly away—thorough ventilation, and facilities for the exercise of the most fastidious cleanliness. The building should, if possible, be built on the side of a gentle declivity facing the west, and sheltered from the north and east winds. In order to maintain an equal temperature the walls should be of a considerable thickness and built with a hollow space in them through which a current of air may pass; the roof should also be of brick, of a curved or pavillion form, and the walls and roof may be plastered. The floor should be sunk about 3ft. under ground, made to slope to a drain (with bell trap) in the centre, and paved with tiles or polished stone. On three sides of the dairy small arches should be turned about 3ft. high, carrying a shelf of slate or marble 3ft. wide, to hold the pans containing milk, and a little above this shelf ventilating bricks should be placed with shutters sliding over them to open or shut, according to the weather. Several landed proprietors in this county (Shropshire) and in Cheshire, have recently erected expensive and highly ornamental dairies on their estates, fitted up with massive marble tables and milk coolers, and with a constant stream of water passing through them, but these are kept more as a luxury than an object of profit, and they seldom unite all the conveniences essential to a good dairy, because the architects who plan them are seldom or never practical farmers. I shall be happy to give "W. W." any further information on the subject.—A Farmer.

[2105] HEATING ENTRANCE HALLS.—I have used Pierce's pyro-pneumatic stoves with copious supply of fresh air, and found them answer well for heating hall. The stoves are now made by Mr. Penfold, and might be bought from either of the firms referred to. I have also used a stove manufactured by Steward and Smith, with the best results.—T. C. Sorby.

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Dewsbury.—A new Congregational church has this week been opened at Dewsbury. The whole of the front and the wings are constructed of tooled ashlar, from the neighbourhood of Huddersfield, and the remaining external portions of the building are faced with pitched Elland Edge wallstones, with the dressings of Huddersfield stone. The church windows are continued in one length through the gallery. The cost of the entire building, including fittings &c., is about £8,000. Messrs. John Kirk and Sons, of Huddersfield and Dewsbury, are the architects.

WATER SUPPLY AND SANITARY MATTERS.

Irrigated Meadows.—New irrigation works are being carried out on the Craigmillar property near Edinburgh, in accordance with plans prepared by Messrs. Stewart & Menzies, architects, Hill-street. It is proposed in the meantime to irrigate forty acres to the east of Cameron Toll, but if the experiment should turn out to be a successful one, arrangements will probably be made to take in a greater extent of land. The works now being carried out consist of the usual irrigating feeders and sluices. The inlet sluice for the irrigating feeders commences at the Powburn, near Cameron Toll, and the Powburn is diverted from its present course into the Braidburn at the point where it enters the Prestonfield property.

Rainfall and Evaporation.—On Monday last a paper was read at Edinburgh before the Royal Society of Arts, by Mr. Alex. Leslie, C.E., on "Rainfall and Evaporation in Relation to Water Supply." The paper was divided into two parts, the first of which related to the loss sustained by evaporation and absorption in various districts, both in England and Scotland. Details were given of a numerous set of observations, from which it was seen that the loss varies in general from 12in. to 15in. annually, but exceptional years give different results. The second part had for its subject the greatest floods found to flow off certain areas, measured in tens of cubic feet per minute. This was found to be different in various places, depending on the configuration of the country through which the flood passed, and with a similar rainfall the amount run off differs very considerably. It was found to vary from 2 or 3 to as high as 30 cubic feet per minute. The chairman said the society were indebted to Mr. Leslie for the important facts he had brought before them. He held the opinion that the majority of the rain gauges were too small, and that they were not placed at a uniform height, but he left that matter to the Meteorological Society.

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LAND AND BUILDING SOCIETIES.

Newcastle Benefit Building Society.—The 20th annual report and balance sheet of this society have just been issued. During the year 876 shares have been entered 21 realised, 26½ redeemed, and 45½ withdrawn, leaving at the present time on the register, including entrances the last subscription night, 873½ shares. The accounts have undergone a thorough audit, and the mortgage securities have been carefully examined by the auditor and committee appointed for that purpose. The profits made during the year will be allotted immediately after the annual meeting, by way of bonus, to all shareholders whose shares have been entered not less than one year, in accordance with the altered rule.

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Our Office Table.

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The Bombardment and the Public Works of Paris.—The public edifices of Paris more or less damaged by projectiles are the churches of S. Sulpice, S. Etienne-du-Mont, and the Pantheon; the Polytechnic and Normal Schools; the Lyceums of Corneille, St. Leonard, and Descartes; the Ecole de Droit, Ecole de Medecine, and Ecole des Mines; the Sorbonne, the Observatory, the Gobelins; the Museums of Cluny, of Natural History, and of Mineralogy; the hothouses of the Jardin des Plantes, containing a magnificent collection of orchids, which are completely destroyed; the hospitals of the Val de Grace, La Pitié, La Charité, Les Enfants Malades, La Salpètrière, Les Jeunes Aveugles, Enfant Jesus, La Maternité, and Lourcine; and the ambulances of S. Perine; Dames Augustines, and the Jardin des Plantes are also damaged.

The Surveyorship of Bridewell and Bethlehem Hospitals.—This appointment is apparently much coveted by the profession, although it is not easy to say why it should be so in the face of the requirements of the Governors and the scanty remuneration offered. Upwards of seventy candidates sent in their applications at the time appointed. From this number thirteen were first selected, and on Monday last the number was reduced to five, from among whom the successful candidate will be appointed on Monday next. The names of the five gentlemen selected by the Governors are—Mr. J. T. Christopher, Mr. Jas. Edmeston, Mr. Frederick Marrable, Mr. F W. Porter, Mr. Richard Roberts. We can only repeat with regard to this matter the opinion we have before expressed, that the eagerness exhibited by architects in the pursuit of these appointments and their indifference to the imposition of humiliating conditions is not calculated to raise the profession in the estimation of the public generally.

Lighthouse Works at the Chickens Rocks.—The arduous and difficult work of erecting a lighthouse on the Chickens Rocks, off the Calf of Man, in which the Commissioners of Northern Lighthouses are engaged, has so far progressed satisfactorily. The work at the Chickens—a dangerous tide-covered rock which lies about a mile off the southern point of the Isle of Man, in the very hottest part of a rapid tideway—has been in progress for two years. It is under the charge of the Commissioners of Northern Lighthouses, and designed by the engineers. Last season afforded 84 days on which landings could be made; but as the rock is covered at an early period of the tide, the time available for work has sometimes not exceeded an hour. The tower is built of granite from Dalbeattie, the stones being dressed at Port St. Mary, in the Isle of Man. Its outline is a hyperbola, and the masonry has been raised to the height of 13ft. The light will be revolving, and will be elevated 115ft. above high water.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, January 16th, the following names were read and passed for ballot, viz. :—As Members,—Richard Albert Notley, 27, Royal Exchange; Perry St. Quintin, 27, Royal Exchange. As Associates,—Edward E. James Castle, 4, Brick-court, Temple; Arundel Rogers, 2, Paper-buildings, Temple; Hugh Shield, 3, King's Bench-walk, Temple; Julian Horn Tolmè, 1, Victoria-street, Westminster; Frederick Meadows White, 4, Paper-buildings, Temple. The following candidates were balloted for and declared duly elected:—Thomas Fenwick Hedley, Sunderland; Alfred Owthwaite Sedgwick, Watford, Herts.

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MEETINGS FOR THE ENSUING WEEK

Monday.—*Institution of Surveyors.*—"On the Land Purchases of the Tunbridge and Dartford Railways." By Mr. Edward Ryde. 8 p.m.

Tuesday.—*Institution of Civil Engineers.*—Discussion on Mr. Bridges Adams' paper "On Train Resistance on Railways." 6 p.m,

Friday.—*Civil and Mechanical Engineers' Society.*—"On Limes and Cements." By Messrs. R. M. Bancroft & H. E. Hunt. 7.30 p.m.

Saturday.—*Associated Arts' Institute.*—"On Traditional Ornament in Goldsmiths'-work" By R. H. Soden Smith, M.A., F.S.A. 8 p.m.

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Chips.

Mr. W. E. Frost has been elected a Royal Academician in the place of Mr. McDowell, honorary retired member (since deceased). Three new associates have been elected.

The trees between the Albert Memorial in Hyde Park and the Kensington-road are being transplanted.

The Civil Service Commissioners are advertising for candidates for two technical clerkships; we presume they want architectural draughtsmen. The salaries are £150 per annum, rising £10 yearly to £300; and £100 rising to £200. The clerkships are to be the subject of an open competition, with an entrance fee of 10s.

On Monday last the Council of the Royal Academy examined the drawings submitted by candidates for the probationership. We are informed that the architectural drawings were very numerous, and that more than the average number of candidates were successful. This is evidently due to the alteration in the rules and the appointment of an instructor. The probationers' drawings for full studentship appear not to have been up to the mark.

The private view of the Watercolour Exhibition at the Dudley Gallery takes place to-morrow, and the exhibition will open to the public on Monday.

The fine collection of pictures which belonged to Munro, of Urvan, and are now in the possession of his sister, Mrs. Butler Johnstone, is about to be exhibited in the South Kensington Museum.

We are able to announce that the lecture which Professor Tyndall has been kind enough to promise to the students of the Royal Academy will be on "Light." It will be delivered in March.

The building for the Exhibition of 1871 is now quite completed, and the reception of goods will commence on Wednesday next.

The art workmanship competition of the Society of Arts has this year, we learn, been fairly well responded to. The judges met to award the prizes on Tuesday last. Some specimens of iron-work and marquetry are spoken of as "specially good" Several manufacturers competed under the new regulations, by which the names of the workmen are appended to the objects exhibited.

The restoration of the north side of the choir of Lincoln Cathedral is now resumed, and the ceiling of the north-west transept repaired. The gallery over the north aisle has been removed.

The iron railings and brick wall at the bottom of Norfolk-street, Strand, have been removed, and the thoroughfare thus opened to the Thames Embankment is directly opposite to the Temple station of the Metropolitan District Railway.

The death is announced of Sir George Hayter, principal painter in ordinary to Her Majesty, at the age of 78.

Mr. Clement Dunscombe, late assistant engineer to Mr. Baldwin Latham, has been elected, out of 102 candidates, to fill the post of Surveyor to the Borough of Kingston-on-Thames, vacant by the resignation of Mr. Slagg.

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Timber Trade Review.

Prices, 24th January, Per Petg. std. hund. :—Quebec 1st quality bright yellow, 12ft. 3 × 11in., 19*l* to 19*l* 5*s*; do. 2nd quality floated, 12ft. 3 × 11in., 12*l* to 12*l* 10*s*; do. 2nd quality dry floated, 12ft. 3 × 11in., 12*l* 10*s*; do. 3rd quality floated, 12ft. 3 × 11in., 9*l*; do. 3rd quality dry floated, 12ft. 3 × 11in., 9*l* 10*s*; Petersburg 1st yellow, 11*l* 10*s* to 13*l*; do. superior quality, 12*l* 10*s* to 14*l*; Dram 2nd yellow, 8*l* 5*s*; do. 3rd yellow, 6*l* to 7*l* 10*s*; Bollsta mixed yellow, 8*l* 15*s* to 10*l* 10*s*; Christiana 1st yellow, 7*l* 10*s*; Gothenburg mixed white, 9*l*; do. 3rd yellow, 8*l*; Gefle mixed yellow, 9*l* to 10*l*; do. 3rd yellow, 7*l* 15*s* to 8*l* 15*s*; Hudikswall 2nd yellow, 9*l* 15*s*; do. 3rd yellow, 7*l* 10*s* to 8*l* 15*s* Munksund 1st yellow. 9*l* 10*s* to 9*l* 15*s*; Norkoping mixed yellow, 7*l* 15*s* to 9*l* 15*s*; Sundswall mixed yellow, 9*l* 5*s* to 9*l* 15*s*; do. 3rd yellow, 7*l* 10*s* to 7*l* 15*s*; do. 4th yellow, 7*l* to 7*l* 5*s*; do. 3rd white, 6*l* 15*s* to 7*l*; do. 4th white, 6*l* 5*s*; Sandviken 3rd yellow, 8*l* to 8*l* 10*s*; do. 4th yellow, 7*l* to 7*l* 15*s*; do. mixed yellow, 8*l* 10*s* to 8*l* 15*s*.

Sandarne mixed yellow, 8*l* 10*s* to 10*l* 10*s*; do. 3rd yellow, 7*l* 10*s* to 7*l* 15*s*; Gothenburg mixed yellow, 8*l* 15*s* to 10*l* 5*s*; do. 3rd yellow, 6*l* 10*s* to 8*l* 15*s*; do. boards, 6*l* to 8*l* 5*s*.

Per 120 12ft. 3 × 9.—Saguenay 1st spruce, 16*l*; Quebec 1st spruce, 15*l* 10*s* to 18*l*; do. 2nd spruce, 12*l* 15*s* to 14*l* 10*s*; Miramichi unsorted spruce, 10*l* 15*s* to 13*l* 5*s*; Bathurst unsorted spruce, 12*l* 5*s* to 13*l* 10*s*.

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LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Metals.

Lead :—							
Pig Foreign	per ton	£17	10	0	£0	0	0
,, English W.B.	do	19	5	0	19	7	6
,, Lead Co.	do	18	12	6	18	5	0
,, Other brands	do	18	15	0	18	0	0
Sheet Milled	do	19	0	0	19	10	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0
Copper :—							
British—Cake and Ingot	per ton	£70	0	0	71	0	0
Best Selected	do	71	0	0	73	0	0
Sheet	do	74	0	0	76	0	0
Bottoms	do	78	0	0	0	0	0
Australian	do	70	0	0	74	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	0	0	65	0	0
,, Refined ingot	do	69	0	0	72	0	0
Yellow Metal	per lb	0	0	6¾	0	0	7
Iron :—							
Pig in Scotland, cash	per ton	£2	11	6	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
,, Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	10	0	9	15	0

Timber.

Teak ....load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	0
Dantzic oak	5	5	6	15
,, fir	2	15	4	0
Memel fir	3	0	4	0
Riga	3	3	3	10
Swedish	2	7	2	14
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	4	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	10	17	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do.	12	15	13	10
Archangel, yellow	11	10	13	10
St. Petersburg, yel.	12	0	13	10
Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	s. 7	d. 5	s. 10	d. 6
First white	7	0	9	6
Second qualities	6	0	7	0
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale....per ton	£6	10	0	0
Sperm body	80	10	0	0
Cod	35	10	0	0
Whale, Sth. Sea, pale	36	0	37	0
Olive, Gallipoli	49	0	0	0
Cocoanut, Cochin, ton	45	0	0	0
Palm, fine	38	10	39	0
Linseed	30	0	30	5
Rapeseed, Eng. pale	49	0	49	10
Cottonseed	28	0	33	0

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Trade News.

TENDERS.

Guildford.—For alterations to premises No. 144, High-street, Guildford. Mr. Henry Peak, architect;—

Pearce and Clark	£689 10
Strudwick (accepted)	557 15

Gipsy Hill.—For making roads and laying drains for the United Land Company, on their estate at Gipsy Hill.

Pearson	£4399 0 0
Wigmore	3999 10 0
Dickenson & Oliver	3650 0 0
Pizzey	3680 0 0
Haynes	3228 0 0
Mayo	3000 0 0
Vickers & Crane	2990 0 0

S. Luke's.—For kitchen, offices, and fittings at S. Luke's workhouse, for the guardians of the poor of the Holborn Union. Mr. H. Saxon Snell, architect :—

Lathey Brothers	£2773
Bamford	2650
Wright Brothers & Goodchild	2415
Gibson Brothers	2397
Woodward	2340
Wicks, Bangs & Co.	2250
Perry Brothers	2247
Howard	2199
Morley & Rogers	2197
Sabey	2180
Rivett	2142
Sheffield	2080
Crabb & Vaughan	1943

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Whitchurch, Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. Local Board Officer Whitchurch, Salop.

Wharfdale Union, Feb. 9.—For plans, specifications, and estimates for the erection of a new workhouse, to accommodate 150 inmates, exclusive of vagrants, on ground situate at Newhall, near Otley. C. J. Newstead, clerk to the guardians, Board-room, Boroughgate, Otley.

Municipality of Colombo, Jan. 31.—For the preparation and supply of the smith and founder's work required for the new public markets and municipal offices at Colombo, Ceylon. S. Grenier, secretary, M.C., Colombo.

War Department Contract, Feb 4.—For the necessary work and materials required in the performance of work and repairs, and supply of labour or materials separately, as required for the service of the War Department, to the buildings in the Permanent Barracks, camps, or property at Aldershott, and connected with the War Department property at or in the vicinity of Aldershott. Director of Contracts, War Office, Pall Mall.

Herefordshire, Jan. 31.—For the erection of farmhouse at Hegdon Hill, near Bromyard, Herefordshire. Ernest A. Day, architect and surveyor, Foregate-street Worcester.

War Office Contract for Timber, Feb. 4.—For the supply of dry ash plank, of the very best and toughest quality, thoroughly seasoned. Forms of tender may be obtained from the Director of Contracts, War Office, Pall Mall, London.

Leeds, Feb. 2.—For the completion of a villa residence in Chapeltown-road. Alfred H. Thompson, architect, Park-square.

Whitchurch (Whitchurch Local Board), Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. S. M. Lockwood, architect, 85, Foregate-street, Chester.

Southend Local Board, Jan. 31.—For certain portions of the house drainage connections to the main sewers. W. Gregson, jun., clerk, Southend Local Board Office, Royal Hotel, Southend, Essex.

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BATH AND OTHER BUILDING STONES
OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,
Quarrymen and Stone Merchants.

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Bath Stone Office,
[ADVT.] CORSHAM, Wilts.

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BANKRUPTS.

(TO SURRENDER IN THE COUNTRY).

George Wheeler, West Cowes, builder, Feb. 4, at Newport.—William Isaac Jones, Grove-road, Acton, builder, Feb. 4, at New Brentford.

PUBLIC EXAMINATIONS.—Act, 1869.

Feb. 11, M. A. Edwards, Fawcett street and Hollywood-road, West Brompton, sculptor.—Feb. 7, G. Hunter, East Dereham, engineer and ironfounder.—C. Godbolt, Lowestoft, builder.—Feb. 16, S. Moss, Chorlton-on-Medlock, builder.

DIVIDEND MEETINGS.

Feb. 1., J. Bromfield, Wilmington, Devon, builder.—Feb. 2, E. P, Tilley, Clevedon, Somerset, builder.—Feb. 7, H. A. Hawes, Yarmouth, saw mill proprietor and timber merchant.—Feb. 6, J. & W. Weeks Paignton and Dartmouth, builders.—Jan. 31, T. Jones & G. F. Gardom, Liverpool, rope makers.

DECLARATION OF DIVIDEND.

G. R. Bonville, late of Glyn, Neath, brick manufacturer, div. 1s. 5d.—J. White, Nottingham, builder, div. 9d.

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PARTNERSHIPS DISSOLVED.

Waddingham & Styan, Manchester, architects.—Holt & Spink, Rochdale, joiners.—Worsley Brothers, Manchester, joiners.—Roberts & Co., Alwen Mills, near Corwen, timber merchants.—Cerrig Hall Fire Clay Company, Caerwys, Flintshire.—J. & T. Davis, Greets Green, brickmakers.—Standing & Littler, Garston, near Liverpool, paviours.—T. G. & J. T. Ladyman, Rochdale, builders.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks :—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—James Epps & Co., Homœopathic Chemists, London.

THE BUILDING NEWS.

LONDON, FRIDAY, FEBRUARY 3, 1871.

THE FAMILY COACH.

WHETHER or no the application of the whip behind, so gently administered by one of the most venerable and venerated drivers of the professional "Family Coach," referred to in the pages of a contemporary, will for long or at all deter "aspiring" *gamins* from audacious attempts to accelerate the pace of the vehicle in question, is open to considerable doubt. For our part, while we cannot help smiling somewhat at the irate demeanour of the offended official, and at the rather amusing combination of the paternal with the magisterial element in the rebukes he has administered from his lofty position on the box-seat, we are inclined to consider as far more ridiculous in their way the fussy overtures of contradictory and absurd advice which are shouted out on all sides of him and his colleagues, not only by the *gamins* aforesaid, but by bystanders in general. In fact, the drivers, guards, and proprietors of this Family Coach are just now pestered out of their lives by a noisy troop, some of whom, clambering up behind, are content all the time to be carried along by it, and to add their own weight to the burden; and others who, taking no part in its proceedings and stuck hopelessly in the mud themselves, yet shriek out so persistently about everything the coachmen do or leave undone, that it is no wonder the nerves of the latter should be disturbed. And what would these malcontents, if any purpose can be gleaned amidst all this contradictory clamour? "Leave the old hackneyed, beaten road," say some, "and go straight as the crow flies, and thus save some miles of distance." "But we can't go across ploughed fields, and should stick in the hedges and ditches if we did, remonstrate the coachmen." "Harness double the number of horses to the old rattle-trap, and so get along quicker, do!" shout others. "But we have got no more horses, nor money to buy any with," is the mild and not unreasonable reply. "Then try steam as the motive power, and so keep pace with the spirit of progress of the age," cries another "aspiring Gambetta" of the craft. "Yes, and sit on the safety-valve, perhaps, and get blown up sky-high for our pains!" is the final and authoritative, though perhaps hardly logical and consequent, rejoinder of the irate driver, who has been stung beyond all endurance.

To drop metaphor, however, there is a good deal deserving consideration in the retort made in defence of the Institute by its Secretary, Mr. Donaldson, to his "aspiring" friend, Mr. Phené Spiers, that "all the Associations formed for the improvement of the rising classes have in vain been tried and failed, and become bankrupt in funds and efficiency." Perhaps the assertion is rather too sweeping, and certainly the Architectural Association might well be excepted from such a category, since it is to all appearance more flourishing than ever. But then it must be remembered that that body wisely and modestly confines its action to efforts of self-improvement; and further, that its very existence precludes the Institute from obtaining any considerable number of students. The Architectural Exhibition has just died a natural death. The Architectural Museum is quaking for its existence, and the Art Classes are painfully struggling into the light. The Academy has just appointed Mr. Spiers himself a teacher of Architectural Art. Professors Lewis and Kerr hold forth at the University College and King's College respectively, and how much attention do the clamorous malcontents pay to the undeniable advantages which these several institutions have for long held, or are now holding out to the profession? Why, the Architectural Exhibition rooms used to appear like a melancholy desert. The magnificent library of the Institute is hardly ever visited. The echoes of the empty Architectural Museum answer, Where, where are the students to study the precious treasures collected here at such infinite cost and trouble? The Committee of the Art Classes are in despair at the falling-off already of the few students who were at first enrolled in their lists. The Professors alluded to are not yet overburdened with hearers, and Mr. Spiers is able to speak for himself as to how many such he has been able to collect. The aggregate will be found to be pitiable, and yet the Family Coach is, forsooth, at fault because it will not add to the competition for these apocryphal, sadly-neglected architectural students. For our part, we think the authorities of the Institute are quite right in refusing to go forth piping in the markef-place to suit such obdurate children, who have no intention of listening to the voice of any charmer.

The Institute has already conceded so far as to have set up, in obedience to previous clamours, a magnificent steam engine to crack a few halfpennyworth of nuts, in the shape of the Voluntary Architectural Examinations, and these have but proved hitherto a *fiasco* not for want of energy on the part of the examiners and moderators, but for lack of the material to be examined. Look at the result of last year, and see what a mouse the mountain brought forth after all the labour, the pains of which were trumpeted to the world. For any good produced the Institute might as well have thrown the £100 this machinery cost them on that occasion into the Thames.

Another equally absurd outcry is that for a diploma; and the Institute is, in our opinion, quite right in turning a deaf ear to it. A diploma, such as is sought for, is about as likely to be obtained as a slice out of the moon; and if it could be obtained, what would be its use, and who wants it? Depend upon it it is only the incompetent who demand it. We have little sympathy with that highly respectable but mediocre majority of the profession who ask for such protection. Those who know the ground they stand upon are in no wise afraid of free trade. No family coach can drag a load of incapables up the hill of fame, and no royal or special road can be made for its ponderous wheels. It is not the machine that is in fault, nor even the driver. Let those who think it is that of the latter try their own hand at the reins. There is one merit at least in the concern—namely, that all its numerous proprietors have an equal voice in the direction of its affairs, and none are prevented from giving their opinions within it; and as to the grumblers outside, they can join its ranks themselves with the same aid, and try what their energy can do for the general good. If they refuse to do this, we can only advise the driver of the family coach to pay no heed to their clamour, lest, like the old man with the donkey, they at last have to carry it themselves.

SOCIETY OF ARTS.—ART-WORKMANSHIP, 1870-71.

IN issuing their instructions to competitors for the present series of prizes, the Council of the Society of Arts this year made a very important change. We read that, "having in view the International Exhibitions about to take place under the Royal Commissioners for the Exhibition of 1851," they have thought "it well to suspend for a time the form hitherto adopted in offering prizes for art-workmanship," and "have decided upon giving a series of rewards for special excellence on the part of all concurring in the satisfactory production of works of industry of the highest character. They consider that they can most effectually ensure their object by offering to manufacturers the highest distinctions they have it in their power to confer, and to workmen liberal money premiums." It will be remembered that it has previously been customary to select certain specimens of art-manufacture, which were photographed or cast, and placed before the workman for imitation or reproduction, giving him, however, the opportunity of choosing his own models or examples if he preferred so doing. We pointed out last year that the specimens exhibited under these latter conditions were the least satisfactory, because the workman produces much better results when he has some good model before him than he does when he is forced to rely upon his own taste and judgment in the selection of his copy. In our notice of the Workmen's International Exhibition at the Agricultural Hall, we had again to dwell upon this fact, and to show how frequently the skilled workman was led into gross errors simply from the want of a more discriminating taste.

The objects which have been forwarded in compliance with the new regulations are certainly less numerous than on former occasions, clearly showing that having to work from prescribed examples did not deter men from competing, as has been more than once authoritatively stated. Indeed, had it not been for the zeal with which Messrs. Cox and Son have come forward as manufacturers, the exhibition would have seemed an unusually small one. The part of the programme, moreover, which applies to manufacturers and to objects involving combined labour, has practically failed to produce the intended results, and we regret that it will therefore be scarcely possible for the Society of Arts to carry out their proposal of sending the premiated works as a contribution on their part to the International Exhibition, "showing the results of recent efforts which have been made to improve art-workmanship in this country." We must own that we are surprised to find that so few have availed themselves of the very liberal offers of the Society. The Exhibition is by no means representative of some of our commonest art-manufactures. One would have thought that here, if anywhere, both masters and men would have been proud to make a good show, especially in view of the forthcoming International Exhibition.

The wood-carvings are not up to the mark: perhaps the best of them is the dead pheasant, by Mr. R. G. Tuddsbury (No. 10). The bird is hanging by one leg to a sprig of oak, with some well-carved corn and foliage in the back ground. The material being lime-wood, the carving of the feathers on the breast is excellent, and the relief of the whole is well expressed. No. 5, an oak mirror frame of Elizabethan design, by W. H. Holmes, is very well executed, and in good keeping with the style chosen. Mr. J. Osmond's oak panel (No. 3), adapted from an iold example, is good in execution, but too uniform in the relief of the foliage. The oak frame by Mr. Nichols, with a very naturalistic treatment of flowers (No. 4), is coarse in execution and heavy in design: the scale of the ornament should in all cases be adapted to the object to which it is applied. The figure carvings, with the exception of S. Peter (No. 6), and the figures round the pulpit, are very poor. The pulpit (No. 1) and the lectern (No. 2) we have, if we mistake not, already noticed among the objects at the Agricultural Hall. They are here exhibited by J. F. Wilson, joiner, W. C. Anderson and J. Wilcocks, carvers. The pulpit looks more like foreign than English work; the design is fairly good; but the general effect of the whole is not pleasing. One of the best objects in the Exhibition is the marqueterie table designed and exhibited by Thomas Jacob (No. 12). With him were associated in its production C. Rich, marqueterie cutter, C. Helfer, engraver, G. Brown, turner, J. Platt, carver, and G. Tappin, polisher. The table, made of amboyna wood, has a circular top on a square stem, with inlays of various-coloured woods. It is all we could wish, both in design and execution, and will doubtless be well rewarded. No. 13, a panel in marqueterie, executed by W. Clayton, from the designs of Mr. E. Bassett Keeling, is crude and inharmonious in colour. The cabinet (No. 14) in mahogany, with appliqué carvings in ebony, is exhibited by Messrs. W. Bertram & Son. The names of the workmen employed upon it are given, that of the designer being W. M. Holmes. We cannot say much for the design, nor is the finish of the carving and cabinet work particularly good. The inlaid marbles are so poor as scarcely to deserve attention. Some good specimens of bronze répoussé work are contributed by Messrs Robert Tow (No. 44) and G. Deere (No. 45), whose mask from the Laocoon group we had occasion to praise last year. He sends this year the head of a satyr (the cymbal-player) in high relief, blocked by W. Theuerkauff, while Mr. Tow's work is a copy of a head in low relief by Jean Goujon (the architect of the Louvre). The wrought-iron work is extremely good, notably the gate for the Pall Mall branch of the Union Bank of London (No. 38) executed by J. Winstanley, with the assistance of G. Winstanley and Fred. Lancester. With the exception of the rose, shamrock and thistle (which should have been rather more conventionally dealt with), the design and execution are excellent. The whole work is so thorough and honest, and the treatment of the foliage is so admirably suited to the material, that we can certainly predict for this gate a handsome award. The wrought iron bracket or gas branch by W. Morris (No. 39) is also in all respects a very satisfactory and creditable piece of work. The execution of W. Robson's bracket (No. 40) is very good, though the curved lines are not quite pleasing. We have had, we believe, on a former occasion to praise Mr. Robson. No. 20, a figure of a child who has fallen asleep in pulling off its stockings in preparing for bed, is clever, but surely not suitable for competition here. Mr. J. W. Gould should exhibit as a sculptor. Mr. J. Daymon, jun., has three plaster panels (Nos. 23 and 24), which he has designed and executed, under the direction of Mr. Salvin, for a drawing-room frieze at Thoresby Hall. We cannot speak of them with much praise; the ornament is thin and poor, and the modelling of the fruit indifferent. The gilt bracket (No. 25) by A. Aspinwall must surely be a copy of that well-known illustration "The origin of the Corinthian capital"—a basket and some acanthus leaves. Bookbinding, cameo-cutting, and die-sinking have each only one representative. The medal exhibited by Messrs. Waterlow & Sons (No. 49), subject Prospero and Miranda—engraved by T. Brittain—is very good in workmanship. The dies, both for the obverse and reverse, seem to have met with a misfortune in hardening. The glass-workers are very inadequately represented, though the contributions of the Messrs. Barnes show that in Birmingham there is good work doing. Elijah Barnes has, among other objects, an excellent chalice-shaped cup in imitation of the old Venetian glass (No. 59), and the flower-glass (No. 62) by T. C. Barnes is very well executed. Nos. 41 and 42, gas-standard and inkstand, designed and executed by J. Taylor, are very good specimens of metal-work. We must not forget the ceremonial trowel of damascened steel (No. 36), designed by S. G. Rice and made by T. R. Rice, working for the firm of Messrs. Hart, Son, Peard & Co. The design—subject, "The house that Jack built"—is very quaint and good, and the workmanship first-class.

The objects exhibited by Messrs Cox & Son embrace nearly every possible branch of art manufacture. Stone-work, metal-work, wood-carving, embroidery, and silversmiths' work are but a few of the trades here represented by this single firm. Their contributions deserve a separate article, both on account of their excellence and of their numerical strength. Foremost among them we must place the oak font cover, with wrought brass enrichments, from the designs of Mr. B. J. Talbert, upon which have been employed the following workmen:—E. Hooper, T. Burdett, J. Skelley, W. Marsden, A. Barratt, W. Lucas, and J. Taylor. It is of the usual pyramidal form, with elaborate brass crockets and finial, capital in treatment and design. Near it is a wrought-iron gas standard, relieved with brass and jewelled, also from the design of Mr. Talbert, upon which were employed (as forger) W. Prendergast and (as fitters) R. Emms and J. Morgan, which is excellent in form and execution. The communion plate made by this firm, with whom is now associated Mr. Keith, is also very good. It is impossible, though we have endeavoured to do so as often as we can, to indicate the names in all cases of the workmen, for on the communion services were employed no fewer than 6 silversmiths, 8 chasers, 2 enamellers, 2 engravers, and 1 jewel setter. Among the designers we find the names of Messrs. Goldie and Child, S. J. Nicholl, and B. J. Talbert. The heavier and more cumbersome of the objects from Messrs. Cox's are on view at their manufactory. Thus we find here only the painted tiles for a reredos, which they have produced. These tiles were painted by W. W. Robinson from a cartoon by H. Cassolani, the treatment being too much in the manner of stained-glass to please us. The carved oak altar-table which supports the church-plate is a good piece of workmanship. We do not give the numbers attached to Messrs. Cox and Son's contributions, as they are not yet numbered consecutively with the remaining objects in the collection. The portable sets of communion plate and other articles of ceremonial sent by this firm are very good. Some of the smaller examples of wrought-metal work merit a more careful description; specially good is the portion of a tomb-rail designed by Mr. J. Moyr Smith, and made by J. Morgan. Viewing the entire gathering of objects this year in the light of a national trade competition for £500 worth of prizes, we can but repeat our expression of disappointment at its meagreness, and at the apathy it displays on the part of manufacturers. Whether this is due to the regulation respecting the names of workmen, or to want of publicity, or to pure selfishness, it is hard to say, but from whatever cause it arises it is inexcusable.

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SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.

On Thursday evening, the 26th ult., a lecture "On Pre-historic Art" was delivered at the rooms of this society, 9, Conduit-street, Regent-street, by Dr. G. G. Zerffi, of the Science and Art Department, South Kensington. Sir M. Digby Wyatt presided. The lecturer, in his preliminary remarks, expressed the pleasure he felt in lecturing under the auspices of a society for encouraging the fine arts, observing that, much as the fine arts deserved and required encouragement, yet, till recently, when Government had taken the matter in hand and provided the nation with institutions like that at South Kensington, little had been done in England to promote the fine arts. Dr. Zerffi then proceeded with the subject of his lecture, but as the matter has been more fully treated by him during his course of lectures at South Kensington "On the Historical Development of Ornamental Art" (which are regularly reported in the Building News) it is unnecessary for us to occupy our space with an abstract of the present lecture. Suffice it to say that, in the course of his remarks, the Dr. was frequently interrupted by the applause of his hearers.

The Chairman (Sir M. Digby Wyatt) having briefly commented on the pleasure with which he had listened to the lecture, invited discussion, first calling upon Mr. S. C. Hall.

Mr. S. C. Hall, F.S.A., said he had, in common with the rest of the audience, listened with great satisfaction to the able and eloquent lecture which had been delivered, and it was only to be regretted that it was so brief. It was, however, a satisfaction to know that the authorities at South Kensington gave occupation to a gentleman so learned as the lecturer, possessed of such extensive and varied information, and in an eminent degree capable of disseminating amongst others the knowledge that he had himself acquired (applause). He was sorry and (he might add) ashamed to say that this was the first occasion on which he had had the pleasure of hearing Dr. Zerffi, but it should not be the last. He had heard from various sources of the delight with which the lecturer had been listened to in various parts of Scotland and elsewhere. After congratulating the society upon its prosperity, he remarked that it was an encouraging sign of the times to see the interest taken in the study of art history, observing that not so very long ago it would have been almost impossible to have got together such a large audience to listen to a lecture on such a topic as "pre-historic art." The lecturer had shown, however, how interesting such an apparently dry subject could be made. In conclusion, he thanked Dr. Zerffi most heartily for the pleasure he had given him that evening—a pleasure which he hoped often to experience.

Mr. Daniel Grant, while concurring with Mr. Hall as to the general merits of the lecture, thought it hardly possible to divide mankind into three races, black, yellow, and white, as it was exceedingly difficult, if not quite impossible, to say where one race ceased and another commenced.

Sir M. Digby Wyatt said a most agreeable duty devolved upon him—that of returning thanks to the lecturer. In proposing a hearty vote of thanks to Dr. Zerffi for his able and interesting lecture, he could hardly do more than say he thoroughly acquiesced in everything that had been said by Mr. Hall. Dr. Zerffi had gone over the subject of pre-historic art and given an outline of the development of art in general. The subject was so interesting and extensive that he was sure they would be encouraged to prosecute their studies in it. He Sir Digby) had found the lecture most valuable in arousing thought and suggesting ideas; and as he had devoted much time to the study of art, and was himself a professor, he thought that if *he* found the lecture suggestive the audience would find it much more so. Having referred to certain points in the lecture which had more particularly struck him, Sir Digby went on to say that the audience had heard that evening what might be called a distillation of the laborious efforts of others, who had been obliged to investigate every stone and proceed step by step. The object of all professors should be to share with others the delight and benefit they had derived from their own studies; and they did not, he was sure the lecturer would agree, pretend to be infallible, or even better or wiser than other men.

The thanks of the meeting having been tendered to Dr. Zerffi, that gentleman, in acknowledging the compliment, expressed his gratification at the kind reception he had met with. With regard to Mr. Grant's criticism, he would only then observe that he had not used the word "races," but "groups." There was not time to enter into an argument with Mr. Grant on the question, but on some subsequent occasion he hoped to be able to convince Mr. Grant of the accuracy of his premises. He agreed with the remarks of the chairman as to professors in general, and said that for his part he always told his students not to take for granted a single thing he said, but by hard study, either convince themselves of the truth of his statements, or refute them if they could. He concluded by briefly drawing attention to the great importance of the study of the history of art.

On the motion of Dr. Heinemann, a vote of thanks was accorded to the chairman, and the proceedings terminated.

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Rome—The Roman correspondent of the *Westminster Gazette*, referring to the Eternal City under the new régime, writes that new schemes for the "embellishment" of the new Italian capital are continually being brought forward "by those who have evidently no intimate acquaintance with the sites with which they propose to deal, and those who appreciate the peculiar grandeur of Rome are kept in continual alarm at some new Vandalism being committed." He refers to one scheme which, "as it has received a prominent place in the columns of the semi-official *Liberta*, is instructive in helping us to understand the mind of the Government. It proposes to make a sort of new town or Bayswater of the quarter of the city extending from the Quirinal to the railway-station, and this without alluding to the fact that the new street, already projected and laid out under Mgr. de Merode, has absorbed al the vacant land. and as much of the formerly existing buildings as it was judicious to destroy; it purposes a new fountain in the Piazza of the railway station, as if intending to arrogate to itself th merit of the beautiful new fountain lately placed under Pius IX.; it proposes to convert S. Bernard into the Senate-house, and Sta. Maria degli Angeli into a Chamber of Deputies; . . . . . and i proposes further to make of the Via di Porta Pi a Rue de Rivoli."

THE GENERAL EXHIBITION OF WATER COLOUR DRAWINGS AT THE DUDLEY GALLERY.

THE private view of the seventh exhibition of the Dudley Gallery took place on that dull and dark afternoon, Saturday last. We hardly thought that this favoured little exhibition, which well deserves its popularity, seeing that it emanates directly from the artists themselves, and is not the self-interested collection of some dealer, had numbered so many seasons. We observe, however, with regret, that the Dudley is not up to its usual excellence this year; indeed, with a few brilliant exceptions, the average pictures are below the mark. A larger number of dead birds unpleasantly stiff, and hothouse flowers remarkably glaring, together with the works of lady amateurs, take up those places occupied in previous exhibitions by better pictures, and it is to the works of Poynter, Marks, Mawley and Posidon Rivière that we must look if the entire collection is to be raised above the commonplace. The screens in the exhibition are, to our thinking, unfortunately placed, the reflections in the pictures hung on them being very disagreeable to the eye, and the screens themselves effectually shrouding the light from the main walls of the room. We should advise, on a future occasion, that a long and rather low screen should be placed down the centre of the gallery; this, while affording quite as much screen room as in the present arrangements, would not hinder the light from reaching the walls of the exhibition. Mr. Poynter sends three portraits and three landscapes to the Dudley. We were much delighted with the delicate tones and beautiful feeling for colour of his portraits, and it is not the artist's fault that the models were not handsomer. Perhaps No. 109, "Mrs. G. Spottiswoode," is Mr. Poynter's best portrait. In No. 253, "Lady Wensleydale," the lights are a little flickering; this is particularly felt in the reflected lights on the face, which are a shade too bright. There is, however, much feeling displayed in the painting of the face, and the accessories of the background are well managed. The painting of the blue silk dress in the portrait of "Lady Blanch Ogilvy" is very masterly; indeed, there is nothing that Mr. Poynter so much excels in, or seems so much to delight in, as the treatment of blue of all shades and varieties of tone. No. 517, "A Pastoral," a landscape by the same painter, might be more justly called an English pastoral. The scenery is park-like and beautiful, and the poetical sentiment well maintained throughout. No. 538, "Geese on the Green," and No. 558, "Filing the Saw," will also enhance Mr. Poynter's reputation as a landscape painter. Mr. Marks, the newly elected Associate of the Academy, sends a large water-colour, No. 289, "Thoughts of Christmas," occupying the right hand centre of the room. The figure of Friar Daw is well drawn, and there is much humour in his jolly red face. The pigs, too, are replete with the comic element which pervades all this artist's works. As a whole, though, the painting is hard, and the pigs too much cut out from the background. No. 191, "An Ecclesiastical Question," by A. B. Donaldson, has many excellent qualities, though the various heads have, perhaps, not quite enough individuality about them. The artist has apparently endeavoured to give the many different phases of character which the Romish Church so well knows how to unite in one common object, but through fear of descending to caricature has not individualized them enough. Mr. Donaldson's fine sense of colour is seen better in a very good landscape, No. 191, "Rouen." The reflection of the sky in the river, and, (with the exception of the rather unfortunate blue blouse of the workman) the cool colour of the foreground are excellently rendered. Mr. Field's landscape from the Thames, No. 180, "A Ferry," gives well the pleasant light of a summer afternoon, and the rolling clouds in the sky are well painted. Perhaps Mr. Walton's best work in the Exhibition is No. 249, "Very Early Spring." Are not the lambs in the middle distance a trifle too white? No. 263, "St. Martin's Summer," by the same artist, is powerfully painted. No. 7, "The White Cockade," by A. C. H. Luxmore, is a work of merit, though this artist seems to us rather to copy Mr. G. Leslie in his art than to see things for himself. Mr. Ditchfield sends many landscapes, painted with always the same grey effect. This, when once done, impresses you, being really like one of those phases that nature sometimes assumes, but the constant reiteration of it by Mr. Ditchfield is most wearisome. We recommend to this artist a more faithful attention to Nature. Let him study her regularly, and with greater earnestness, and try to overcome the lazy habit of satisfying himself with one single effect; then his talents will have an opportunity of developing themselves. No. 28, "Blanchisseuses Bretonne," by Joseph Knight, is very good in colour. The willows are, perhaps, a little too formally painted, but the figures are excellently given. Mr. Harry Leslie sends four truthfully painted landscapes, all doing so young a painter great credit. In No. 69, "North Quay, Yarmouth," the square sail of the boat is not very pictorial, but the colour of the cottages, with their battered walls and tiled roofs, is capital. His best work is No. 518, "A Norfolk Wherry," placed on the screen. No. 141, "The Son of Asgad," by A. B. Houghton, and No. 204, "A Midsummer Night's Dream," by Briton Rivière, are both replica water colours of oil pictures exhibited in the Academy last year. Mr. Rivière's "Expectation," No. 549, is very cleverly painted; the reflections of the blue sky on the black pig are capitally given. Mr. Mawley's two landscapes, Nos. 525 and 534, both entitled "Evening," are works of great merit. The leafless branches of the winter trees against the subdued light of the sunset sky in No. 525 are beautifully rendered: they betray, too, a refined sense of colour. There is much that is powerful in a larger work by the same artist, "An Old Stone Quarry," though the subject is rather uninteresting. M. Gerome sends a water-colour, probably the sketch for his picture of the same subject, painted some years back, No. 464, "Dante." M. Willems, the Belgian artist, has also an excellent study on one of the screens, No. 616, "The Widow." The large dog occupying the foreground of the sketch is particularly well painted. We cannot commend No. 286, "Hid," by Mr. Yeames. There is almost a vulgarity about it, and the figure of the mother behind the door is badly drawn. Mr. Napier Henry's rather singular rendering of the old fairy tale of "Cinderella and her Sisters," No. 123, has many of those qualities carried to excess which we have admired in other works by his hand. Though we do not think this quite up to his usual mark, it is at any rate widely removed from the dreaded commonplace. No. 182, "S. Peter's," by J. C. Moore, is cleverly wrought, and differs much from the usual representation of the Eternal City, a rather grey and dim effect being given. No. 89, "The Mystery of Faith," by S. Solomon, a priest holding up the pyx containing the consecrated wafer, has much grandeur of expression. The same painter sends a clever drawing called "The Singing of Love," No. 496. Mr. Crane, another artist of the same school with Mr. Solomon, has a very good picture of two peacocks, quaintly entitled "Bluebeard and Gloriana." There is rather too great a prevalence of horizontal lines in the background, and the sparrow perching near the peacocks is considerably too small. No. 447, "A la Porte d'un Pauvre," by A. H. Tourrier, is a picture of merit, though the figure of the monk is painfully stiff. Mr. Arthur Severn sends three landscapes, the best being "After Rain in the Highlands;" here, though the bridge is hard and cut out, the colour of the muddy torrent is true to nature, and you seem to feel the overpowering force with which it sweeps onwards. In No. 336, "Romeo and Juliet," by Miss Maddox Brown, the colour of the moonlight is well felt, and the coolness of the shadows happily attained. Another lady's work, No. 87, "The Last of Autumn," by Katherine Malleson, deserves praise. Mr. Earle has many creditable landscapes in the exhibition. No. 33, "England in April," is very pleasant and sunny, and the lights and shadows on the green foreground grass are very truthfully rendered. Amongst other pictures of merit we recommend particularly to our readers' attention, No. 530, "Evensong," by E. R. Hughes; No. 572, "Gardeners' Pests," by Pauline Walker; No. 312, "October," by Albert Goodwin; No. 595, "Westminster Abbey," by J. W. Inchbold; and No. 601, "Mill at Beaulieu," by Field Talfourd.

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DECORATION OF ST. MARY'S CHURCH, NEW FERRY.

THE decoration of this church has just been completed. The chancel has been entirely refurnished, and a new stained glass window inserted. A new reredos of carved stone, alabaster, and marble, has been erected, and altar-rails, stalls, and prayer-desks take the place of the old pine fittings. With regard to the decorations, ornamentation in gold and colour has been applied to all the existing surfaces. The nave roof has presented a good field for the display of colours. The principal used are grey, green, white, dull red, and black, with the sparing use of other relieving tints. The whole of the walls of the nave are tinted buff and ornamented with diapers, powderings, and bands in dull reds and greens. The aisle walls have a dark red dado, divided from the buff of the wall above by a border of green and black. The stonework throughout has been cleaned, but untouched with any coloured decoration. The chancel, of course, has received the greatest amount of enrichment and the most careful study. The lower portion of the walls, to the height of about 6ft., is painted a rich crimson colour, and powdered with devices in gold and green, except on either side of the altar table, where, to the height of the table, the walls are coloured a dead green lined with dark red. The altar frontal is crimson. The upper portion of the walls is divided into two spaces of unequal height, the under one being the larger. This is covered with a rich lozenge diaper, divided by beaded bands of gold and black on a green ground; the lozenge spaces are filled with a rose pattern in appropriate colours. The upper space, which extends from the diaper to the cornice of the walls, is the most important feature in the whole church, being divided horizontally into twenty panels by an arcade of quaint design, and illuminated with twenty illustrations from the life of our Lord. Seldom more than three figures tell the story in each subject, and in some cases only two. The colouring throughout is quiet, and the figures are boldly outlined and richly detailed, but with little shading. The roof is of elaborate design; the numerous curved rafters are red, banded with gold, white, blue, and black, and studded with small white flowers. The spaces between the rafters are painted with large sprays of the rose, marigold, and chrysanthemum, on a light green ground. The rafters of the roof of the north aisle of the chancel are red, ornamented with white and black rosettes, and banded with gold and contrasting colours. The main principals and timbers are green, ornamented with dark green and gold. The spaces between the rafters are cream-white, diapered all over with floral designs in tawny yellow. The new furniture and decorations are the gift of Mr. Harmood W. Banner, and have been carried out from the designs and under the direction of Messrs. W. & G. Audsley, architects, of Liverpool.

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Result of the Winchester Town-hall Competition.—(By Telegram.)—The first premium in this competition was (yesterday) awarded to Plan No. 25, "Utile Dulci," by Messrs. Jeffery & Skiller, of Hastings. The second premium of £50 to Plan No. 1., "Tria Juncta in Uno." [The whole of the designs sent in in competition are commented upon at length on page 92 of the present number.]

EXHIBITION OF THE WORKS OF OLD MASTERS AT THE ROYAL ACADEMY.

Another Notice.

OUT of evil comes good. When the British Institution collapsed through the inertness of its old members, and the interesting exhibitions of ancient masters that used to take place in Pall Mall, had to be discontinued, it seemed very doubtful whether any such display of the works of the great painters of past times would again be given. The thanks of all Englishmen are due to the Royal Academy for the spirited way in which the matter has been taken up by it. It was thought that the admirable collection of last year, as being the first, and so got together with extraordinary zeal and pains, was little likely to be rivalled in future years. To some extent the former collection did stand by itself, especially in some of the larger works—but still the present exhibition is a splendid sequel to its predecessor. In some respects it surpasses it, especially in the Early Italian and the Spanish schools. In one respect the large collection, numbering 426 pictures, is less instructive than some of the smaller ones in Pall Mall, inasmuch as there is not the same opportunity of comparing the various specimens of the same master and different masters of the same schools. A little more classification would have been advantageous. But with so fine an assemblage of the choicest paintings in our sight, we must not be too critical about the details of the exhibition. The first feeling upon going through the rooms was one of bewilderment at the variety. It was some time before one could settle down to study the collection, of the general quality of which there can be no question. It is admirable. There are, however, several paintings which should never have been admitted. Most notably the so-called Muller and Turner, neither of which have more than a colourable resemblance to the works of those masters. Of course some attributed to Raffaelle are not by him. There are so few originals of his in this country that it is as well to show the reputed ones, especially when, as in the present instance, undoubted examples of his beautiful works will show the intelligent observer why the copies or school pictures are not by him. The greatest contributors are Lord Ashburton, Mr. Wynne Ellis, the Earl of Warwick, the Earl of Dudley, Lord Overstone, Mr. Thos. Baring, and the Marquis of Westminster. But many who have sent fewer pictures have equalled, as far as quality is concerned, the largest and noblest contributors. Lady Eastlake, for instance, sends only three, but for every great quality they are surpassingly good. Mr. Louis Huth's "Old Chrome," is a host in itself; for facility, power, vigorous treatment, and truth to nature, it is scarcely to be excelled. The Marquis of Lansdowne sends only two, but then one is the portrait of Lawrence Sterne, by Sir Joshua Reynolds; Mr. G. C. Schwabe's beautiful pictures, by Dyce, are another instance of quality above quantity.

We will begin our detailed notice with the landscapes, of which there is a splendid show, both by our own and foreign artists. The Marquis of Westminster's landscape by Philip de Koning possesses all the excellences of that great but scarcely appreciated painter. We have little doubt that many so-called Rembrandts, especially those most highly finished, are really his work. In the present instance there is a grand expanse of country, with Cleves in the distance, done with the accuracy of a photograph, but entirely free from all hardness—the great distance is admirably portrayed. It is, in fact, a perfect bird's-eye view of the scene. With less breadth, but painted with equal success, are Jacob Ruysdael's "grand water mills," No. 56 belonging to Mr. Wynne Ellis, a work of very great merit—the tumbling out of the water as the sluices are opened is exactly true to nature; and 64 belonging to Mr. G. Field. But even these, in our opinion, are eclipsed by the Marquis of Westminster's extraordinarily fine example of Hobbema, No. 96, "A Forest Scene with Figures."

Of the English school we have already mentioned the grand Chromes 7, 35 and 45, all splendid examples. The oaks in No. 7 are beyond all praise. It seems only right that such a vigorous hand, of such unhesitating power, should have dashed off the prince of trees. There are several fine Constables, the finest being No. 16, "The Hay Wain," which was exhibited in Paris in 1825, and gained the gold medal. This is a truly magnificent picture, and admirably true to nature; the patient, inquiring dog, the quiet ducks, the noisy carters, the light through the trees in mid-distance, so skilfully thrown in, all bring the scene literally before the eyes. Somewhat less important, but equally true and capital, is the view of Flatford on the river Stour, lent by Miss Constable. By Calcott there are two specimens, both beautifully drawn, but ill coloured, chalky in tone, and quite unnatural. The sea-piece, 124, would be a remarkable bit of description if the water were only wet and of the right colour.

We must not close our remarks upon this part of the collection without noticing the grand Burghem landscape, the perfect keeping of which is so delightful. This is another of the great Westminster Collection. Seldom has any artist lived to paint such a landscape and such figures and cattle. Notice especially the admirable finish of the white cow. There is scarcely anything more charming in the whole collection. But of all marvellous things in the landscape way, surely nothing surpasses the peep through the windows of the exquisite John van Eyck's S. Jerome, called in the catalogue (191) "A Philosopher in his Study." If it was not too much almost to expect Royal Academicians to trouble themselves about pre-Raffaelite stuff, such a curious misnomer would be astonishing. This philosopher is the most perfectly correct S. Jerome that was ever painted. He is clad in red; his red cardinal's cap is at the side; his lion is rampant in the background; his favourite birds are running along the foreground; and the picture is one of the choicest things we have ever seen. It possesses every virtue of the highest possible finish, without any of its drawbacks. As we look at it we wonder how ever such a touch could have been attained. What superlative excellence of colours! 450 years have not changed them. The picture is as fresh as when it was elaborated. The landscapes through the openings in each side are simply astonishing. The amazing amount of detail, all in perfect perspective, without the slightest hardness, in the space of two or three inches! This picture throughout will repay the most minute attention and scrutiny. In minuteness it surpasses even the other examples of this glorious painter, fine as they are. Mr. Hope's very pure and carefully painted "Virgin and Child" is too well known to need much description, though at South Kensington it has never been possible to examine it as well as it can now be seen. Many who have often seen it before will be surprised at the extraordinary delicacy of the finish of the flesh, the glowing gems of the diadem — the exquisite chiselling of the sculpture. It may be interesting to note that the representations of the church and the synagogue are almost identical with the famous carvings on the door of Rochester Cathedral.

The third, and to some extent the most important, of the Van Eyck paintings is Lord Dudley's beautiful example, "The Celebration of High Mass." Though nothing can surpass in taste and finish the charming "S. Jerome" before mentioned, this excels it in variety of interesting detail, greatness of subject, and broader scope. Whether we consider the admirable harmony and splendour of colour, the exact representation of every most minute particular of the scene, or the composition and feeling of the figures, this is in every way a most extraordinary painting, and worth the most earnest study. It is particularly valuable architecturally, and for its ritual characteristics. As in Mr. Hope's picture, the sculpture is most beautiful. The carpets and coverlets are a study of themselves. One use of triforium galleries is indicated—viz., to enable the servants of the church to let down the costly hangings, which even now in some foreign countries form so striking a part in the festival decorations. Special attention is due to the gorgeous metal dossel, with its elaborate chasing and enamelling. The detail is so perfectly given as to enable any competent person fully to realise the work as it really existed. From these inestimable gems of art we will turn to the somewhat later Italian works, but before doing so we must not pass over the richly-coloured and finely-conceived "Last Supper,' by Giotto. From the whole feeling of this picture one cannot fail to notice how much the English school of the fourteenth century was affected by the Italian, especially in the taste for colour. Foremost among the fifteenth-century works of Italy is the great triptych by Fra Angelico de Fiesole, which, notwithstanding the darkening of the colours generally, is a fine specimen of the master. It has been said that he could only paint angels, saints, and good people; but this picture, in our opinion, contradicts the common saying. Very few paintings of the same date show more power in description of evil passions and suffering than this. The tyrant with the snake diadem is marvellous; so are the envious ones, and the quarrelsome tearing each other's flesh. In some of the vicious groups a very fair knowledge of anatomy is shown. There is amazing power, considering the date, in the avaricious man held down down by the hair of his head while the demons pour molten gold down his throat. Still, doubtless by far the most attractive part of the subject is the grand choir of Heaven, seated in its eternal serenity of peace, and the joyous circling bands of the Blessed dancing, as it were, through the clear blue ether; one, hardly believing that such blessedness could be hers, is directed by the angel to turn from the downward road of misery. How lovely is the ethereal buoyancy of the ascending saints as they fly through the air. When the picture was in its original lustre, the upper part, where the angels' wings are beautifully stamped and indented, must have sparkled like gems, as we sometimes see happens in the finest Italian miniatures of the same date, such as occurred in Mr. Ottley's sale, now in the choice collection of the Rev. T. Fuller Russell. Another very remarkable picture, though in every way inferior to this, is "The Nativity," ascribed, possibly with truth, to Botticelli, though if so he must have been considerably over seventy years of age. The circled dance of angels is very similar to what we have just noticed, as is also the loving embrace of the angels. All the shepherds are crowned by angels with the evergreens, and peace to the men of goodwill is portrayed. The Devil, in dismay, and grinning horribly, is forced to retreat from the happy sight, while an angel choir is carolling on the roof of the inn. There are other works of this master. 294, one of his great circular pictures, is a capital example—very religious and monumental. None is equal in feeling to the choice specimen at South Kensington, belonging to Lord Elcho. Of pictures of this class scarcely anything approaches "The Wise Men's Offering," by Andrea Mantegna—an admirable production in the artist's best manner, though a good deal the worse for age. Few pictures so fully and beautifully tell their story. It is, in fact, of the very highest quality. The various expressions of reverence in the young Eastern, the negro, and the old king who is offering his gold, is most striking. The finish of this picture is equal to anything but the Van

Eycks in the whole collection. By Filippo Lippi we have a fine study for an adoring angel in tempera (No. 281). In the driest, but still a grand and impressive style, is Carlo Crevelli's great picture (303). The richness of the ornamental decoration, fruit, and flowers, and the splendour of the dresses, are remarkable; but there is an exaggeration of muscular development and expression which detracts much from the works of this artist. These faults are more especially to be noted in the Pieta (318). The collection cannot boast anything by Leonardo da Vinci equal to what was shown last year; still there is a good representation of "Christ bearing the Cross" (275), and two fine crayon drawings (268 and 270). By his imitator, Luini, there is only one questionable example (290), a replica of the figure of Christ in the picture (so terribly retouched) in the National Gallery of his disputing with the doctors, which is ascribed to Leonardo da Vinci. It is a pity that the paintings by this great man have been so frequently ascribed to Leonardo, possessing, as they do, most valuable qualities of their own, and certainly never needing any other name to recommend them. Of Leonardo's contemporaries, we have a first-rate work of Lorenzo de Credi's. It is astonishing that so great a painter should almost till our time have been disregarded, as merely a copyist of Leonardo's works—to which, in fact, in colour and execution, they really bear little resemblance. There are few finer instances of this distinguished artist than Lord Dudley's "Holy Family" (302). The colour is exquisitely pure—nothing can surpass the intensity of feeling thrown into the adoring, reverent face of the little S. John. The landscape in the background is excellent. Giovanni Bellini is splendidly represented in the present collection. It is difficult to imagine finer specimens than Nos. 92 and 315; the former the property of Lady Eastlake, the latter of the Earl of Dudley—an exquisite "Virgin and Child;" both mother and infant of wondrous beauty. No. 92 is more important in subject—"The Virgin and Child surrounded by Saints." He is blessing the donor of the picture. The chief interest of the whole is concentrated upon the divine infant. It is one of the most religious pictures we know. On either side of this, also belonging to Lady Eastlake, are good examples of single figures by Giovanni Baptista Cima. Of the same school Lord Dudley has a "Holy Family" (300), by Marco Basaiti, which is in all respects, though certainly authentic, very inferior to the picture by him in the National Gallery. This is partly due to its having been carelessly restored at some time or other. We now turn to the great master of Raffaelle. By Perugino we have five pictures, all of small size and importance, but interesting as showing whence his greater pupil derived his earlier training. By Raffaelle himself there are but three originals, one large "Crucifixion" (307), said to have been executed when he was only seventeen. It is entirely like Perugino, but inferior to his better work. As one might expect, it wants power; the angels with flying bands are very weak; the repose of the Saviour is good, but the best point is the S. Jerome. Very different in power and quality is the priceless little gem (309), "The Three Graces." As at Leeds, so here, this forces itself upon one's notice, and claims for itself the pre-eminent place, though in such princely company. We doubt if any picture of its size exercises so magic a fascination upon all beholders. 285, the Marquis of Westminster's "Holy Family," is only a school picture. There is but one Francia (319) a good example, and that is all. There is also only one Sasso Ferrato, a fair specimen, exhibiting all his faults and beauties. The hard contrast of colour is scarcely pleasing. Of the school of Venice there are many splendid things. There are ten by Titian. Excluding the portraits for the present; the two finest are the Marquis of Westminster's "Woman taken in Adultery" (63), a splendid composition, though hardly true to the Gospel narration, and Lord Dudley's (365) "Susanna and the Elders." The treatment of the subject is very curious, but the painting is excellent. The loveliness of the face reflected in the mirror is enchanting; the landscape in the background is capital. "The Golden Age" (334), by his fellow pupil, Giorgione, is a gorgeous piece of colouring—the feeling as deep as the tone of colour—all sunshine and happy peace.

Conspicuous for rich and harmonious colour are the pictures by Tintoretto, of which there are four; 95 is a sketch of a large picture at Venice; 151, the great one from Hampton Court, lent by her Majesty. Notwithstanding its merits in colour it has many faults—exaggerated mannerism, heavy unmeaning shadow with great indistinctness of outline. In every way better is Lord Dudley's "Christ Delivered to the Jews" (328). By Palma Vecchio and his pupil Bonifacio there are good examples, 329, 357, which may well be compared, the latter surpassing his master in taste, colour, and composition. His models are very fine. Of the later Italians we have good but uninteresting Carlo Dolces, 73, 81; a poor Domenichino, 167; and several Guidos—3, a very sweet "Sleeping Christ," the Virgin Mother adoring. The most important one is "S. John in the Desert," 276, lent by the Marquis of Westminster. We must conclude our notice of this part of the collection with Paolo Veronese. Of the four pictures by him by far the finest and most interesting is that lent by the trustees of Lord Taunton, a very lovely instance of the favourite subject, "The Holy Family with S. Catharine." The only fault is that the composition seems somewhat cramped. It is quite possible that the canvas may have been curtailed. It is seldom that so grand an assemblage of Italian art almost from the earliest time has been brought together.

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DECORATIVE ART.

MR. E. J. POYNTER, A.R.A., delivered a lecture very recently at the Midland Institute, Birmingham, on "Decorative Art." He commenced by saying that the lecture would deal with the elements of beauty in decorative art; the first part being devoted to the subject of our art manufactures, and the second to painting. He announced that whatever was made by man was capable of being made either beautiful or ugly, in a more or less degree, and their productions might be divided into three broad classes: first, those objects which, being made simply for use, without after-thought of beauty, were not susceptible of decoration or were not fitted for it by reason of the rough usage to which they were exposed; second, that vast class of productions which, being also made for use, have been found capable of being ornamented, and whose beauty of appearance was considered of more or less importance; and, thirdly, those objects which were made purely for purposes of decoration and for the sake of their beauty. After enlarging upon the beauty of fitness and the beauty of workmanship and appropriate decoration, the lecturer said no work of art manufacture could have any pretensions to be called beautiful unless it had the first and second elements of beauty—fitness and workmanship; and, unless it had these two qualities, it could not, by any possibility, be rendered beautiful by the most elaborate and best executed ornament which could be applied to it. He attributed the decline of art in this and other countries to a dread of appearing to be able to afford handsome things, and, combined with that, especially in this country, a desire of rapidly making fortunes—the root of all that was sham and bad about us. Expensive shams took the place and commanded the name of beautiful work, and this was so much a part and parcel of the spirit of the age, that the people had really come to believe that progress meant this and nothing more. He pointed out in detail what the elements of beauty were which were necessary in a work of art manufacture, enforcing the fact that without good construction and good workmanship no work could have any value as a work of art. He next considered the question of decoration, treating of it first with regard to smaller objects, such as household furniture, plate, &c., and dealing with the larger matter of decorative painting in the second part of his lecture, illustrating the principles he laid down by references to the works of Michael Angelo.

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SUITABLE LAND FOR SEWAGE PURPOSES.

IRRIGATION in some form or other is sure to be sooner or later the universally adopted method of disposing of our sewage, and it therefore becomes all interested in the matter to turn their attention not only to the best method of irrigating the land, but to the selection of land best suited for irrigation purposes. The latter part of the process has not to the present time received the attention it demands, and we therefore were glad to see the subject treated with his usual success by Mr. J. Bailey Denton in a paper recently read by him at Maidstone. The paper is throughout a valuable one, dealing exhaustively with the sewage question in all its details, and bestowing special attention on the point above alluded to. When irrigation was first proposed many seemed to suppose that sandy and waste lands were the proper places to receive the sewage. The old idea of its being, after all, somewhat of a nuisance, has not yet left us, and we were careless about its value so long as we could insure its final disposal without polluting our streams and rivers as of old. Mr. Bailey Denton's experiments, confirmed by the opinion of Dr. Voelcker, the well-known agricultural chemist, point to clay lands as the most advantageous for the distribution thereon of sewage. If properly drained and subsoiled, the water percolates through them as easily as through a sandy soil, and, generally speaking, the crops raised from such land will be of a superior quality. Sandy and gravelly lands not only require more sewage than clay soils to insure a productive growth, but they frequently allow the sewage to pass through them only partially filtered down from the surface to the drains or to the subterranean water level existing lower in the earth.

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BRISTOL PORT AND CHANNEL DOCKS.

FOR some years past (says the *Railway News*) considerable attention has been paid to the improvement of the navigation of the Avon and the approach to Bristol, and various plans have been suggested by eminent engineers for the improvement of the harbour and the establishment of docks at a more commodious position than at Bristol. In 1828 Mr. Milne proposed a masonry pier at Portishead. In 1839 Mr. Brunel proposed a floating pier at the same place, to be formed of large pontoons; and two years later Sir John Macneill proposed a breakwater pier. In 1853 the construction of a dock was suggested as suitable for the Portishead shore, and Mr. Neale further proposed that it should be a floating dock. The opposite side of the channel—viz., the Gloucestershire side—has been selected as an appropriate location for docks by a number of engineers. The late Mr. Rendel reported in favour of Avonmouth as the best ocean steam-packet terminal station in connection with the port of Bristol, but he insisted that whatever harbour was adopted the river Avon must be made to flow through it, in order to secure a sufficient scour by the flood of all tides. Mr. Hawkshaw's plan was to construct a steam dock at the mouth of the Avon for the accommodation of the ocean steamers, and to connect the dock with Bristol by a railway laid on the margin of the river. The result of inquiries which have been made at various times is that while Mr. Neale recommended permanent dock works at Portishead, Messrs. Rendel, Thornton, Howard, Hawkshaw, Page, Fowler, and Abernethy have recommended docks at Avonmouth, and Messrs. Milne & Brunel and Sir John MacNeill have been in favour of a pier at Portishead. In 1864 a new Act was passed, authorising the construction of docks at Avonmouth, and the works have for some time past been in progress, under the direction of Mr. Brunlees. The lock of the Chanel Dock at Avonmouth is 450ft. long and 85ft. wide. The dock itself is 1,400ft. long by 500ft. wide, the available water area being about sixteen acres, with a length of quay wall of 3,200ft. The depth of water over the Channel Dock cill at ordinary high water of neap tides is 36ft., and the depth of water in the dock is 23ft. 6in. Proposals have been made for constructing docks at Portishead, the lock of which is 450ft. long and 65ft. wide, the dock itself being 1,800ft. long and 500ft. wide, the area of water being equal to about twelve acres, and the length of quay wall 2,200ft., depth of water on cill 23ft. 6in., and in the dock 17ft. 6in.

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New A.R.A.'s.—The Royal Academicians and Associates met on the evening of Thursday, 26th ult., to elect three A.R.A.'s. Messrs. H. S. Marks, F. Walker, and T. Woolner were chosen by clearly-pronounced majorities.

ISAMBARD KINGDOM BRUNEL.*

ISAMBARD KINGDOM BRUNEL was born on the 9th of April, 1806, the only son of Sir Mark Isambard Brunel, who, after some American experience as a civil engineer in America—consequent on his Royalist sympathies proving unacceptable to the Revolution, which at that time was paramount in France—had settled in this country seven years, and had been married nearly that time to an English lady, Miss Sophia Kingdom. On the completion of an important commission entrusted to him at Portsmouth by the Government, Sir Isambard Brunel removed to London, and continued to live in Lindsay-row, Chelsea, until the heavy responsibilities connected with the progress of the Thames Tunnel compelled him to live nearer thereto. At Chelsea young Brunel commenced his education, under the Rev. Weeden Butler, who resided in the neighbourhood — having been previously taught Euclid by his father, and exhibited considerable talent for drawing, even at the age of four years. We next find him at Dr. Morell's school, at Hove, near Brighton. An extract from one of his letters in 1820 reveals an early liking for the profession he adopted, or inherited. A passing and comparatively uninterested reference to the progress of his classical studies is followed by the description of "an amusing job" he had been about, viz., taking a plan of the town, which he had got "pretty exact." For the attainment of "a more exact plan," however, he requests the loan of his father's "long eighty foot tape." From Hove he proceeded for two years to the Collége Henri Quatre, at Paris, and in 1823 permanently took his position in his father's office. In 1825 the Thames Tunnel was commenced, and Sir Isambard's diary bears frequent witness to the energetic devotion displayed by his son under the many difficulties which attended its construction. In the accident which, on the 1st January, 1828, put a stop to the works for seven years, he nearly lost his life, and was most severely injured, remaining under medical treatment for several months. On his recovery, he applied himself with energy to his profession on his own account. His first "competition venture" was sending in four designs for the then contemplated Clifton Suspension Bridge. These, however, did not find favour with Telford, who had been requested to advise upon the plans submitted, and who, indeed, reported equally unfavourably of all; submitting a design himself in the new competition which followed, which was also in its turn rejected. Brunel was ultimately appointed engineer, but financial difficulties prevented the completion of the bridge until some time after his death.

In 1833 he commenced his career as a railway engineer in the service of the newly-started Great Western Railway Company. We cannot trace here the history of his long-continued exertions in behalf of that company. It differs little from the history of all who had to encounter and vanquish the obstinate resistance offered by those who, a few years later, with equal blindness, plunged into utopian schemes for the construction of new lines similar in all but the need for their establishment to those they had formerly opposed. Brunel's connection with the Great Western Company continued until 1851; he also planned other lines in the United Kingdom, and also in Italy and India.

His abstemiousness in everything but tobacco probably contributed in no slight degree to the enormous capacity for work which he possessed. At times he appears to have been able for weeks together to do with but two or three hours' sleep out of the four-and-twenty, and that frequently taken in his arm-chair or travelling carriage. His exertions in behalf of railway enterprise would alone have won him a first-class reputation, but his genius for work led him to seek for fresh triumphs in the field of ocean steam navigation. In 1836, mainly by his influence, the Great Western Steamship Company was formed, and in April, 1838, the *Great Western* successfully made her first voyage from Bristol to New York in fifteen days, with an expenditure of only three-fourths of her coal, to the great joy of her owners and the discomfiture of Dr. Lardner and others, who had advanced the opinion that Atlantic steamers could not carry sufficient coal for the voyage. The success of the *Great Western* led to the construction of the *Great Britain*, which was built of iron, and launched in 1844. This vessel, in which, with the exception of an experimental trial in the *Archimedes*, the screw-propeller was for the first time adopted, after successfully accomplishing several voyages, ran ashore in Dundrum Bay. She was rescued by Brunel, but the misfortune caused the collapse of the company, and the vessel passed into the hands of Messrs. Gibbs, Bright & Co., of Liverpool, who, after refitting her, started her again in 1851, as a regular steam-ship between Liverpool and Australia.

The success attending the adoption of the screw-propeller led, in 1841, to Brunel's appointment to conduct experiments for the Admiralty, with the view to the application of the principle to the ships of the Royal Navy. He appears to have met with the usual amount of red-tape opposition and petty ill-will, which all appear destined to encounter who are unfortunate enough to have dealings with Government officials, and although his exertions led to the ultimate successful adoption of the screw, his services were never acknowledged, either by any pecuniary or other recompense.

His last great enterprise, the building of the *Great Eastern*, was conceived by him shortly after his appointment as engineer to the Australian Mail Company in 1851. The misfortunes which so long appeared inseparable from all and everybody connected with the apparently unlucky ship are too fresh in the minds of our readers to need repetition. After ruining the company under whose auspices she was originally projected, and even when built refusing for a long time to move into the water, she was at length successfully floated in January, 1857. Even then, for a long time she continued to appear somewhat in the character of a white elephant, and her designer was not permitted to witness her triumphant career in the laying of the Atlantic cables. He appears, however, before her completion to have entertained some idea of her adoption of such a purpose, for when Cyrus Field came to England in 1856, in connection with the then proposed cable, and visited the *Great Eastern*, then nearly finished, Brunel said to him, "There is the ship to lay the Atlantic cable."

On September 5, 1869, while engaged in preparing the *Great Eastern* for sea, he was attacked with paralysis, and gradually sinking, died on the 15th of that month, in the 54th year of his age. A window to his memory has been erected in Westminster, and a statue, executed by Baron Marochetti, awaits a site, promised by the First Commissioner of Public Works. More lasting monuments to him, however, far exceeding even the memorials of his works, are the benefits which they won for science and commerce. The Atlantic cable itself must ever carry to and fro, with its thousand messages, some memory of Brunel's fame, for it is not too much to say that without his ship its successful completion would have been a thing yet to be accomplished.

As a lesser form of memorial, this biography by his son is very valuable. Its accuracy and completness are worthy of commendation, and the object of its author, viz., "to provide as far as possible the materials on which a just judgment of his career can be based," appears to us fully attained.

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* "The Life of Isambard Kingdom Brunel." By Sambard Brunel, B.C.L. London: Longmans & Co.

ON THE NEW ST. THOMAS'S HOSPITAL.

(*Concluded from page* 62.)

IT was thought desirable throughout the wards to have a smooth surface of flat ceiling, but throughout the corridors and a great portion of the hospital the arches and girders are left to show the construction, the soffits of the arches being finished with a setting coat of plastering. The joists and sleepers, or concrete and paving, are laid on the top of the Dennett arching in the ordinary way. The waggon-headed ceiling of the chapel and the groining of the aisles is also executed in the same material, the aisles having stone ribs. The thickness in the panels is 5in., and in the stiles 10in. The reason which induced me to adopt this mode of construction for the chapel roof was not only the satisfaction of having a real sound solid construction, but it afforded an opportunity of carrying up several flues to the apex of the roof, which must otherwise have cropped up in an objectionable mode on the balustrading. The flues are carried across the groining or aisles on the back of the main ribs, then up the piers of clerestory walls, and again on the back of the main roof. Provision being made for sweeping at certain points easy of access. I may here mention that the flues from all the low buildings are taken across the corridor ceilings, and carried up with the main building, thus avoiding all risk of smoke and disfigurement. The ceiling of the Governor's hall is constructed with iron girders and Dennett arching for the same reasons. The flues for the rooms on the lower floors had to be disposed of, and instead of interfering with the parapet and balustrading, were carried over the back of the cove, and taken out of the roof in the ordinary way. The "Dennett" material is certainly very handy in execution; it accommodates itself to any form of arch or groin; it is strong, has great resistance against fire, and, when set, does not exert any lateral pressure; but care must be taken, and a liberal allowance made for expansion during the process of setting, and, finally, I believe it is as cheap if not cheaper than any other fireproof construction. The superficial area of arching used at the hospital in floors and flats is about three hundred and thirty-seven thousand feet.

The rivetted iron girders, of which there are about 1,250 tons, were made in Belgium at the Sclassin Works, and although not quite so neat in finish as one would wish (many being exposed to view), yet at the same time they are composed of excellent material, and stood the proof tests well. They were delivered very regularly, and the delay which so often occurs from the non-delivery of ironwork was avoided. The flat roofs over low buildings and corridors, which in many parts form terraces of communication, are constructed in a similar way. The surface of arching is covered with concrete, laid to the required fall, and then covered with asphalte—"Pilkington's patent," which consists of the introduction of a layer of felt between two coats of asphalte. The lower coat is laid in polinceon, about half an inch thick, and the upper coat in Seysell, half an inch thick, with flushing of the same material. The whole, as well as the paving in the basement, has been executed by Mr. Pilkington in an excellent manner. The paving and channel stones used in the areas are the patent Victoria stone, composed of granite chippings and Portland cement cast in moulds, and indurated by a process somewhat similar to Mr. Ransome's. It forms a capital paving, and a considerable saving has been effected by using it in lieu of rubbed York. The traffic in the areas is of course unimportant, but the paving in question has been severely tested in the Poultry and on Blackfriars Bridge, and is standing the test well. The corridors are paved with tiles one foot square and inch thick, in alternate squares of red and buff, with black borders. They are executed in Ransome's material specially indurated, and when one considers that this material is found most effectual as a grindstone, I am induced to expect that it will stand the effect of friction as well, if not better, than any natural stone. The cost of such paving bedded and jointed in Pertland cement is very moderate. The quantity required will be about 30,000ft., and I do not think so good an effect could be produced in any other material with equal durability at so small a cost. The floors of wards are laid with wainscot oak as being non-absorbent, and the walls are plastered with Parian cement for the same reason. It has been endeavoured to incorporate a tint with the finishing coat of the Parian, with a view to avoid the glare of the natural white colour, and painting hereafter. Certain experiments were tried, and it was found that with a backing of Portland cement and a setting coat only of Parian, a more uniform tint was produced than by using Parian throughout. Although great care has been taken in the manipulation, the result is not wholly satisfactory. Had we been able to wait until the walls were more completely dry, a more uniform tint would probably have been produced.

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* Read by Mr. Henry Currey, F.R.I.B.A., before the Royal Institute of British Architects, on Monday the 23rd ult.

The ward windows are constructed in three divisions, as shown on sections, the lower part being to open in the usual way, and the upper sash drops to the depth of the transom, which is quite sufficient for clearing the upper stratum of air in the wards. The whole of these sashes and frames, and the greater portion of the doors, were made in Sweden by the firm of Messrs. Ekman. My assistant, Mr. Harris, went purposely to Sweden to inspect the works, and brought back a most satisfactory report of the machinery, drying chambers, and general capabilities of the establishment for turning out good work, and the result has fully justified the confidence placed in them.

The ground floor of one of the pavilions has been used up as a drying-room (by building up temporarily the various openings) in which all the floor boards and other joiners' work have been thoroughly seasoned. One of the many newspaper critics, seeing these openings built up, regretted that the governors were unable to utilize the whole of the hospital, and that some of the wards had consequently been built up. A little inquiry would have enlightened him and explained the reason of the temporary blockade.

In designing the joiners' work, all mouldings and quirks have been dispensed with as far as possible, as such parts only afford harbour for vermin. The wainscot floors are tongued with hoop-iron, the nail holes stopped with coloured putty, and prepared for waxing and polishing. The windows of the pavilions are glazed with plate-glass, with a view to a more equal temperature, and the corridors are glazed with flatted crown.

The warming and ventilating arrangements are indicated to some extent on the drawings hanging on the walls. It was determined to depend as much as possible on natural ventilation, avoiding all costly arrangements and fanciful theories, at the same time providing the means of changing the air during cold and boisterous weather and at night. The main extraction shaft is carried up in the well-hole of the staircases, and in this is placed the smoke-flue from the boiler, consisting of a wrought iron tube 15in. diameter. The boilers for warming purposes would not of course be available in the summer, but the furnace for the supply of hot water and baths would be continuous in its operation. In the upper part of this shaft are also placed the hot water cistern, and if found necessary, hot water coils will be added to assist the rarefaction. Shafts are carried from the ends of all the wards, both at the ceiling and floor level, and from the centre at the stove shaft hereafter mentioned, communicating with a horizontal trunk in the roof, which trunk is connected with the heated shaft previously referred to. To replace the air thus extracted, fresh air is introduced by means of zinc tubes laid between the Dennett arching and the floor boards, communicating with the stoves and hot water coils, thus passing over a cool surface in summer, and tempered in winter by contact with the heated surfaces before entering the wards, the whole admitting of regulation by valves. Each pavilion has its independent means of warming and ventilating, avoiding as much as possible all complication in the arrangement, but the pipes are so arranged that in the event of a break-down in any one block, its neighbour can come to its assistance during its temporary failure. A chamber is formed under the ceilings of the corridor in basement and ground floor, into which the whole of the rooms in the low intermediate buildings forming the out-patients' and casual departments are ventilated, and this chamber communicates at each pavilion with the main extraction shaft before described. The wards generally are warmed by three open fireplaces, aided in cold weather by an auxiliary system of hot water. The corridors and staircases are also warmed by hot water. The open fireplaces stand in the middle of the wards, with vertical shafts. These fireplaces might have been arranged against the outer walls, but bed space would thus have been sacrificed. The stoves might have been placed as they are, but with descending flues to the outer walls. This, however, would have involved great complication in the arrangement, and risk of smoke and difficulties in sweeping, and the piers, already small enough, would have been so riddled with flues that they would have been unequal to carry the weight imposed. It was therefore thought best to carry up a vertical shaft throughout. It may detract somewhat from the appearance of the wards, but it has, I think, great compensating advantages. The shafts are constructed, as shown on the drawings, with an outer case of cast iron, and a inner smoke tube 15in. diameter. The hot metal does not, therefore, come in contact with the atmosphere of the wards, but the space between the two tubes becomes an efficient ventilating shaft, which is connected as before with the main trunk in roof. The smoke tube is carried down to the basement, and is swept from below without disturbing the wards. The whole arrangement is capable of easy removal for repair. A cast iron socket is built into each floor, supported on two small bearers running from girder to girder, and the Dennett arching is made good to the same all round, thus avoiding any communication from floor to floor. The outer casing is of cast-iron, put up in pieces and bolted together, and is easily removed at any time should it be necessary to repair the smoke tubes. In the upper story the iron casing is discontinued, and a brick casing built on the concrete floor, which is more convenient for passing through the roof and carrying the external shaft. It will be observed that the three stoves go into one flue. This is made of ample dimensions, and a valve is provided at each stove to close the connection with the flues when the stove is not in use. As far as it can be tested in the present unfinished condition of the work, the arrangement works satisfactorily. The stoves are formed with an air chamber at the back, having a large heating surface of metal (but which cannot be heated sufficiently to vitiate the air) standing in a pan of water, somewhat similar to the Gurney stove. The ventilation of the water-closets and lavatories is entirely independent of the wards, and is carried up the shaft in the river turret, in which are placed the hot-water tanks for supply of baths and water coils. The stone shafts at the angles form the termination of the foul linen and dust shoots, which are carried right up to the external air. The ventilation of the museum and school buildings is on the same general principle, the ventilating and smoke shaft being contained in the tower at the southern end of the building. The whole of the warming and ventilating works have been most satisfactorily carried out by the well-known and experienced firm of Haden & Son, of Trowbridge, and I am glad to bear testimony to their ability and the careful and considerate attention to all works entrusted to them.

The risk of fire is reduced to a minimum, but considering that an alarm even of fire would act most injuriously on many cases, a system of fire mains and cocks is provided throughout the building. The cocks admit of being served either from the rising main or from the large tanks provided in the towers. A special main has been laid by the Southwark and Vauxhall Company to supply the building, and a constant service will, it is expected, be supplied; but in the event of any accident happening to the main, provision is made by an arrangement of back valves to supply the cocks from the tanks. These arrangements have been carried out by Messrs. Shand & Mason, whose name is a guarantee for their efficiency. The gas services have been executed by Messrs. Strode, and although not calling for any special description, I may say that they have been carried out in the usual satisfactory manner by that firm.

The lifts, of which there is one to each pavilion, demand a few words of explanation. They are constructed upon the hydraulic ram principle. A boring was made to a depth of 70ft., and lined in the usual manner for about 22ft. through the gravel with cast-iron cylinders to keep back the water, and from this point to the bottom through the clay the well is lined with brickwork. In this well is sunk a cast-iron cylinder, 11in. internal diameter, strongly bolted together in 9ft. lengths, and within this again comes a hollow ram, 9in. diameter, working through this cylinder, screwed together in 9ft. lengths. On the top of the ram the ascending room is attached, consisting of a strong iron frame with iron roof, all strongly trussed together and lined with match boarding. At the top and bottom of this room, on each side, are V guides, lined with gun metal, the top ones having springs to prevent oscillation or sudden shocks. At each side are suspending irons, to which are attached strong chains passing up a groove in the brickwork and over wheels 3ft. 8in. diameter to the counterbalances on each side; these counterbalances work in recesses, and are grooved to run in guide irons. The guide bars for the ascending rooms are of cast iron, placed the whole height to ensure a steady movement. A gear rod passes through the cage to control the lift, and self-stopping gear is attached. The lifts are worked by a fall of water from large tanks fixed in the roof of each block, 104ft. from basement, each tank containing 2,500 gallons. The stroke or rise of each lift is 63ft. The pressure of water is 45lb. per square inch, and the lifts are calculated to raise six persons each time. This principle has been adopted as affording the most perfect safety attainable. The overhead gear is placed at the sides in a chamber specially provided, so that in the event of any fracture thereof, no damage would arise to the cage. There is also one food lift to each block. They are upon the rack and piston principle. The machinery, which is in the basement, consists in each case of a cylinder, 11in. diameter, with piston and rack working in it, with tooth wheel and large drum wheel, on which is coiled the wire lifting rope, passing to the top of the building and over a one-grooved pulley to the cage, which has guides top and bottom; this cage runs in T-iron guides, fixed in each side of walls, from top to bottom of lift hole. A separate wire rope is attached to the top of cage, passing over grooved top wheel to the counterbalance, which is also guided on each side by angle iron guides. The lift is worked by a rod passing up at the corner and communicating with the valve at the bottom. The weight intended to be raised is 1 cwt. The height is 63ft., and these lifts are worked from the same tank as the passengers' lifts. They are easily controlled at any floor, and stop themselves, at the highest and lowest points. The whole of the lifting apparatus has been specially designed and carried out by Fred. Colyer & Co., Engineers, St. Mary's Iron Works, Leman-street, London, the whole of the work being of the most substantial character, and nothing has been neglected to ensure thorough efficiency, combined with perfect safety

The electric communication has been executed partly by Messrs. Reid, Brothers, of the City-road, and partly by Messrs. Moseley, and the ornamental ironwork by Messrs. Skidmore.

In conclusion, allow me to say a few words as regards the cost. The ultimate cost, exclusive of the site, will probably be about £400,000, including foundations and fittings, or £650 per bed, which, in the absence of any detailed explanation, appears to be a large sum; but if all extraneous buildings are allowed for, and the cost of one pavilion taken which accommodates 111 beds, it will be found that the amount would be reduced to £250 per bed, and considering the cubic allowance of space, the number of attached rooms provided, and the character of the work generally, such amount does not appear to me to be excessive. The cost of the building, exclusive of the concrete foundations and the enclosure railing, is about 9d. a cube foot. The contract, among other things, provides a large medical school building, a building for the training of nurses, large administrative offices for the civil department of the hospital, five residences and extensive out-patients' department, and the enclosure of 8½ acres of land with stone curb and iron railing and parapet walls.

I have now only to bear testimony to the excellent manner in which Messrs. Perry have carried out the work, and to thank Mr. Bullivant, the Clerk of Works, and all parties who have assisted me, for the zeal and ability with which they have performed their several duties.

DISCUSSION.

The President (Mr. T. H. Wyatt) said that whatever difference of opinion might exist as to the relative merits of the pavilion or other systems of hospital construction, there could be no question as to the merit attaching to Mr. Currey for the lucid way in which he had described the new S. Thomas's Hospital. There were several visitors of the medical profession in the room, and he would first call upon Dr. Balfour.

Dr. Balfour, having thanked the President for the opportunity of hearing Mr. Currey's paper, and Mr. Currey for having given him the opportunity of personally inspecting the works, said he was very much struck with the great care which appeared to have been taken to provide for all the contingencies of the medical service and the school service of the hospital. Perhaps the highest compliment he could pay to Mr. Currey was to say that on only one point could he find anything that did not come up to his expectations. He was not quite prepared to endorse the opinion that the system of ventilation by shafts in the centre of the wards was perfect, because he feared that in the summer time, when the fires were not burning, and, consequently, when there would be no heat in the centre tube, the system of ventilation might possibly get out of order, and the foul atmosphere of one ward get into another ward. He was not aware that there was any arrangement to prevent such an occurrence. This, however, was the only point of detail which he considered open to criticism. The school arrangements were particularly good, and the care that had been paid to the general arrangement, and to the ventilation was (with the exception of the point alluded to) highly satisfactory.

Mr. **Edward Hall**, F.S.A., Fellow, said that Mr. Currey had not quite accurately described the arrangement of the plan of the Lariboissière Hospital at Paris. That hospital had its ward-blocks surrounding a central court. He thought Mr. Currey said that the ward-blocks extended at right angles to the central corridor. He (Mr. Hall) believed that that arrangement had been carried into effect in two or three hospitals in Great Britain. The first hospital in which the principle was adopted was that at Blackburn. The plan of the Lariboissière was that of a central court with corridors round three sides of that court, the administrative buildings being situated on the fourth or entrance side, the ward-blocks approached by the eastern corridor extending toward the east, and those approached by the western corridor extending westwards. He thought that that arrangement was worthy of a little more attention than it had hitherto received in this country, because the plan was considerably more compact, and allowed of better communication between the several blocks and the administrative department. Another point which he desired to submit to Mr. Currey's consideration was whether it was really most advantageous to cover the interior walls of the wards with Parian cement. At the time when the best mode of constructing hospitals was under discussion, it was considered that Parian cement was the best possible material for the purpose of coating the ward-walls, and that a highly-polished hard surface was greatly to be desired. But in one of the most important buildings of this kind which had been constructed (Chorlton-upon-Medlock) the walls were covered with lime-white, because the funds did not allow of the use of Parian cement; and it had been suggested of late years that it would be very much better to avoid the use of Parian cement, which, good as it was, was liable to absorb some of the miasma—a fault which it was highly necessary to avoid—and that if lime-white were generally adopted for this purpose, it would be possible to renew the surface of that coating periodically, while that material would also act as a preservative against infection. It would be well to bear in mind the many important points which Mr. Currey had only slightly touched upon. The question of the number of cubic feet of space allotted to each patient was very important. He believed Mr. Currey had given a larger number of cubic feet per bed in his wards than had been given in any other case. The distance between the pavilions had also been increased, but not, he thought, to an extent incommensurate with the extra height of the blocks.

Dr. **Fitzgerald** said he had been over the new buildings, and he was highly pleased with the whole arrangements, which were eminently satisfactory in nature and extent. The school and museum arrangements seemed particularly excellent, and compared very favourably with those at University College.

Dr. **Carter** said he had had the advantage not only of hearing Mr. Currey's paper, but of accompanying that gentleman over the buildings several times. At the time when the removal and reconstruction of S. Thomas's Hospital were in contemplation, a note of alarm was sounded by a great medical authority—Brownlow-Moore—as to the danger of building hospitals as permanent structures, and the late Sir James Simpson expressed his fear that hospitals became saturated in course of years with the miasma thrown off by the sick, and ventured it as his opinion that the best plan would be to construct hospitals of a temporary nature, so that they could be destroyed at certain intervals and re-erected on other sites. The great weight of Sir James Simpson's name, he (Dr. Carter) thought, caused undue importance to be attached to his utterance on this matter, giving his conclusions a prominence not justified by the grounds from which he deduced them. As this new S. Thomas's Hospital was the most important work of the kind carried out as a *permanent* establishment since the expression of these opinions, he thought it would be some satisfaction and re-assurance to Mr. Currey and to architects generally when he said that it was the general opinion of the medical profession that Sir James Simpson, on the occasion mentioned, sounded an unnecessary note of alarm, and that there was every reason to believe that the new hospital might be kept as wholesome for all time as any building of its kind possibly could be. His (Dr. Carter's) colleague, Mr. Holmes, had lately contributed to the *Lancet* some criticisms of Sir James Simpson's remarks on this point, which would doubtless be found worth perusal by architects. As to the best material for coating the walls of the wards, he might say that lime-white had been used for the purpose in the new hospital built by the parish of St. Pancras at Hampstead, and since handed over to the Metropolitan Asylums Board; but he thought that with due care and frequent cleansing with a wet sponge, a smooth surface was infinitely preferable, for the products of the miasma escaping from the patients was most injurious when disturbed while in a dry state. He was highly satisfied with the accommodation and arrangements of the hospital, but had to criticise one small detail. He thought it would be found that there was not quite light enough in the operating theatres, and that more window-space would have to be provided before the surgeons felt quite at home in them. With this exception, however, he had no fault to find with Mr. Currey's arrangements. (Cheers.)

Professor **Donaldson** complimented Mr. Currey upon the lucidity of his paper, as well as on the successful completion of so important a work. With regard to the observation by a previous speaker that the new S. Thomas's Hospital differed from the Lariboissière, it was true that the arrangement was different (necessarily so, on account of the site), but the principle was the same. With regard to the defective lighting of the operating theatres, that could easily be remedied. He begged leave to propose that the best thanks of the meeting be presented to Mr. Currey for the very interesting and lucid paper he had read. (Applause.)

Professor **Kerr** said he had very great pleasure in seconding that vote of thanks. He thought they must all have felt that Mr. Currey was a singularly happy man to have got through this great work without a single difficulty. The reason of this might be that he had had a commission so liberal in its character, and had brought to bear upon the execution of the commission—he (the Professor) would not say a very thorough acquaintance with the subject, but a straightforward mode of doing business, and an absence of straining after effect, which two considerations went so far, as could be seen by Mr. Currey's example, to ensure success in such a matter. The description Mr. Currey had given of his work showed that he had, from the foundation to the vanes of his highest pinnacles, one object in view—to do his work with the utmost substantiality and with the utmost liberality, and he (the Professor) thought he had never heard or read the description of a transaction of building that carried more completely to his mind the appearance of everything having been done well and for the very best. (Hear, hear.) The site was one which had afforded Mr. Currey great liberty as regarded space; that was a thing which seldom fell to the lot of an architect. He had availed himself of the privilege in the most intelligent manner, and he (Professor Kerr) thought, from what he heard, that the public were universally inclined to consider this hospital to be a *chef d'œuvre* of its kind, and he personally thought it was one of the most popular works of the age as regarded its efficiency and the likelihood of its proving a success for the purpose for which it was intended. There was one point upon which he should like to say a word, especially as Mr. Ransome was present. He referred to Mr. Currey's use of artificial stone in this building. He (Professor Kerr) confessed that once or twice when he heard the matter mentioned he was inclined to doubt whether Mr. Currey was justified as an architect in using the artificial stone in the way he had done, but from Mr. Currey's description he was perfectly satisfied in that respect. In the way in which Mr. Currey had used that material he had fulfilled its proper purpose, and he need not fear to withstand any criticism which might be offered upon the subject from an artistic point of view. If he (the speaker) understood the matter aright, the capitals of the Corinthian columns were of artificial stone—and he might mention an incident which occurred with regard to these capitals. A certain stone-carver had been promised, as he considered, all the carving work of this hospital. He went on the ground one day and complained that he was being badly treated. The clerk of works, or the person who received him, asked him what he meant. The carver said, "I see Corinthian capitals fixed in their places which were not carved by me." The clerk of works told him that if he would accompany him to the shed he would see these Corinthian capitals by the hundred. They both went to the shed, where the carver was compelled to confess that at a little distance he could not distinguish the artificial stone capitals from those in Portland stone. This tribute was deserving to Mr. Ransome, because he could manufacture his stone so as to be, to all intents and purposes, *the* material which it professed to imitate. He believed these capitals were made solid, or very nearly so, and of such material as to equal the Portland stone. Mr. Currey mentioned the circumstance of this stone being superior to the natural material in the form of grindstones. It had been said that Nature did not undertake to find us in grindstones, but architects would be pleased to hear that Mr. Ransome had invented another stone which was superior to the one referred to, and if Mr. Currey had waited for a few years he would have had a better stone (laughter). He (Professor Kerr) had seen specimens of the new stone of the same kind as Portland stone and of the same kind as certain "barnacles," and he thought that when the time came architects and builders would all feel very much surprised at the extraordinary effects and qualities of this new stone. He understood Mr. Currey to say that the corridors were paved with artificial stone, as it was found to wear better than tiles. That was well worth understanding. Of course they were all acquainted with tile-paving, than which, for ornamental purposes, nothing could be better; but for paving on a large scale, this artificial stone was far superior. It was not a laminated stone, and that, perhaps, was the reason of its durability; but he should like to hear Mr. Currey say whether it was equal to Portland stone as a paving. The very important question of hospital construction which had been raised, and the able discussion by the medical gentlemen in the room as to the best surface for the walls of the wards, had been very interesting. Those of them who had not given much attention to the particular question might have suggested that the ordinary rule might be applicable to hospitals—that Parian cement with a polished surface, being non-absorbent, was liable to a certain disadvantage as regarded the trickling of the water of condensation down the surface; but the propriety of using a polished surface for the walls of a hospital ward was now, to him, unquestionable. Some of them, too, might have suggested that if the lime-white were necessary as a mere coating on the surface, the wall itself might be of Parian cement with the lime over it. Dr. Carter said he preferred the polished surface, as capable of being cleaned when required without much trouble; but a lime surface involved greater trouble in cleaning (or rather removal), and was attended with much greater risk both to the men employed in the work and to the patients in other parts of the hospital. He heartily seconded the resolution moved by Professor Donaldson (Applause).

Mr. **Jennings** thought that on such occasions as that they should look at all the points in connection with the subject. He had not heard any notice taken of any other covering for the walls than Parian cement or lime-whiting. In Liverpool, tiles and enamelled slate were much used, and it was a question whether glazed tiles were not capable of being used for the walls of wards. It was perfectly clear that a surface of glazed tiles or enamelled slate would not be liable to retain infectious matter, but, on the other hand, they would be still further liable to the evils of condensation of the atmosphere unless the ventilation was perfect. He imagined, however, that the provisions made for ventilation by Mr. Currey would be sufficient to carry off the air in such a state as to prevent condensation. He did not see that Mr. Currey had made any special provisions for carrying off the carbonic acid gas, which would not have to be carried off from the upper but from the lower parts of the wards; nor was he aware whether Mr. Currey considered that the opening of the tubes to the edges would afford sufficient ventilation to the wards in summer. He was quite aware that the carbonic acid gas would sometimes pass up to the top, owing to certain circumstances, and that it would not always remain at the bottom. He should like to know what precautions were adopted for carrying out the carbonic acid gas under such circumstances, and when there were no fires? At Sir Charles Barry's dining room the ventilation now and then acted the wrong way, and put out the gas, and the same result had often been experienced by all present who had tried to heat by hot chambers.

Mr. Fowler said that the admirable paper read by Mr. Currey suggested to his mind three subjects of congratulation. Firstly, he congratulated Mr. Currey on the satisfactory conclusion of so perfect a monument as the new hospital might fairly be considered. (Hear, hear.) Secondly, he thought they should congratulate the profession generally on the liberality with which the Governors of the Hospital had enabled their architect to carry out the work. (Hear, hear.) The third party who were to be congratulated were the poor, on having the means of such a magnificient hospital put before them. Twenty years ago the subject of hospital accommodation was not so thoroughly understood as it was now. He supposed they might now think that they had arrived at some tolerably definite ideas upon the subject; but twenty years ago it was a very open question as to what the arrangement should be. In the building of a hospital with which he was familiar (but of which he was not the architect, and therefore he would not name it), the wrong plan was, undoubtedly, ultimately adopted, after a long discussion of the merits of the various methods of arrangement. From what had been clearly demonstrated in subsequent examples of hospital construction, it was impossible that the hospital referred to could have been a success, for the architect was limited to an expenditure of about £100 per bed, though twenty years ago that was considered a very liberal outlay. The expense of the building cubed out was little more than half that of Mr. Currey's S. Thomas's Hospital (9d. per foot cube), viz., 5½d. per foot cube. It was now known that that scale of expenditure was too low to provide an efficient establishment, and it was a matter on which the profession was to be congratulated that in twenty years it had made such satisfactory progress.

Dr. Massey said he thought it was quite unnecessary for him to speak of the various merits of the new hospital, for they were so very numerous. With regard to the ward construction, he might, however, say one or two words. Like the rest of the buildings, the wards had a great many merits. The lifts being constructed separately from the wards was a great advantage, and he thought the floors would prove as non-absorbent as the walls, being of well-polished solid oak, fitted together with the accuracy of a piece of cabinet work. The lavatories and water-closets at the ends of the wards were admirably ventilated and thoroughly cut off from the wards. He thought, however, that there were some points in the ventilation that he should have liked to have heard a little more fully discussed. Mr. Currey had not stated the proportion of the outlet to the inlet area. He (Dr. Massey) supposed there must have been some proportion fixed upon. Neither had Mr. Currey stated the proportion of both inlet and outlet area, either to the size of the wards or the number of patients in the wards. The general system of ventilation adopted, he (the speaker) should have liked to have heard a little more about. It appeared to him that there were summer and winter ventilations—the former, he assumed, by the windows (and nothing could be better); but with regard to the winter ventilation it appeared to him not quite so clear that it would work well. There were two methods of inlet, as he understood, the one along the floor in connection with hot water coils, the other by direct communication with the stoves. It seemed to him that heating all the inlet air in this way, unless it was done with great care, would render it too dry for the use of the patients. Moreover, the outlets were, as he understood, at the end of the ward, not in the end walls, but in the side walls, and likewise round the chimney. He also understood that the air escaping through these outlets at the ends of the wards would go through long horizontal flues into a common tube, and that, in fact, the place would be ventilated somewhat on what was known as Jebb's principle—the principle on which so many gaols were ventilated, and to which there were grave objections. The air that was warmed at the stoves before distribution came into the ward in close proximity to the outlet chimney, beneath which chimney there were gas jets, and he thought that the hot air, from its inlet being so near to these gas jets, would be to a great extent lost by being sucked up the outlet chimney.

Dr. Balfour asked whether there was anything to prevent the foul air from one ward getting into another.

Mr. Currey said he did not think such an occurrence possible.

The President (Mr. T. H. Wyatt) said that for several years he had given a good deal of attention to the study of hospital construction, and he had no hesitation in saying that Parian cement was by far the best material for coating the walls of the wards. At the Middlesex Hospital several years ago that material was used; it was sponged down regularly at intervals, and the hospital authorities had never had the slightest difficulty with regard to condensation. He could not at all conceive that a rough surface was advisable for such a purpose. He had great pleasure in going over the hospital a day or two ago with Mr. Currey. He considered that the construction of the hospital was excellent in every respect.

The thanks of the meeting having been tendered to Mr. Currey, that gentleman said he thanked the meeting for their kind appreciation of his architectural services in connection with the hospital. In replying to the points raised in the discussion, he referred, in the first place, to the shafts in the centre of the ward. It was not intended, he said, to depend on these shafts for the ventilation, but the shafts being there to subserve another purpose it was determined to utilise them also, if possible, for purposes of ventilation. The main means of ventilation were provided at the two ends of each ward, both at top and bottom, by much larger shafts. A rarefying power in these shafts would be got both night and day, summer and winter, because they were warmed by the furnace for the heating of the baths. Mr. Hall was quite right in his criticism about the Lariboissiere Hospital. The Parian cement question had, he thought, been fully disposed of by the medical gentlemen present. The wards of the old S. Thomas's were of Keene's cement, and were regularly washed down every summer. An objection with regard to the use of tiles for this purpose was that there were so many joints, which would harbour vermin. Of course enamelled slate, in much larger pieces than the size of the tiles, got rid, to some extent, of that difficulty. To the best of his recollection, the inlets for fresh air had an area of about 50in. to each patient, and the outlet area was much larger. With regard to the deficiency of light in the operating theatres, that could of course be easily remedied.

The President then announced that the next meeting would take place on February 6th (Monday next), when a paper will be read by Mr. E. B. Denison, Q.C., "On Domes."

GOSSIP FROM GLASGOW.

[FROM OUR SPECIAL CORRESPONDENT.]

HAMLET had some hope that a great man's memory might outlive his life half a year—if he built churches. Had Hamlet lived nowadays, and, to "recover his wits," been sent to Glasgow instead of to England, he possibly might recover them this much, that henceforth it would not be in the churches a man had built he would seek the perpetuation of his memory, for he would find that sometimes the man lived longer than the church. One of the most able architects that has at any time practiced in Glasgow was William Stark, who flourished about the beginning of the century. Among his principal works is S. George's Church; and there is a looming probability that some of those who saw the laying of its foundation-stone may see also the disinterring of it. A proposal to raze the church has been before the Town Council, "the head and front of the offending" being that, lying like an island at the mouth of a river, it necessitates West George-street, in debouching on Buchanan-street, to divide in two and diverge by each side of it. The spire, conceived in the imagination of an artist that was akin to a poet's, is the most original, unique, and perhaps the most beautiful in the city, and with Hamilton's palatial Club-house—grand in its general effect, although somewhat crude in its details—composes a charming pictorial "bit" in our civic scenery. Whether Hamilton, the later artist, had in his mind's eye this picture, it is these two buildings, not individually but in composition, that lift Buchanan-street—the Regent-street of Glasgow—out of the low level of a dull monotony. The spire, however, is the more valuable and independent, relieving the line of a ragged horizontality, and of itself sufficient to give picturesqueness to the street. S. George's Church appears in a no less important aspect as the terminus of a vista from George-street East, the street which at no great distance is the northern boundary of our principal square—our intramural garden and sole statue-site. And yet I have heard it argued that it obstructed the view—the view being an horizon of the "croon o' the causey." There are few buildings in Glasgow, certainly very few churches, either as features in the scenery to the ordinary passer-by, or as objects of special regard to the educated eye, that we can afford less to part with than S. George's Church. Its composition is at once stately and picturesque, its detail large, simple, and singularly expressive; and when Italian architecture is running rank riot in wanton extravagance, there is something refreshing in the occasional study of a design so thoroughly independent of "loudly" emphasized parts, multiplicity of mouldings, or meretricious carving, and, withal, imposing. Stark designed in the large, broad manner, not piecing as a cabinet-maker, but building as an architect. As his material was stone, his workmanship was mason-work. His designs are as free from prettiness as pettiness. They have no feminine finery about them, no weakness or falsity to smother or conceal by an overlay of "ornament." They are rich in that rarest of beauty, the "beauty that unadorned's adorned the most"—the beauty of truth.

It is perhaps not too much to say that the best modern buildings in Glasgow are by Stark. His other chief works are the Jail, the Old Lunatic Asylum, and the Hunterian Museum; and, strange to say, the evil genius that threatens St. George's Church has followed these also. The jail was designed when Greek architecture was little understood and less practised, and although suffering much from not being placed upon the platform that the architect intended, it left his hands a grand example of monumental art—simple, severe and majestic. It early excited the admiration of Hamilton, the architect of that great Greek work, the High School, Edinburgh. Of late years it has been tinkered and cobbled and patched to meet certain necessities, a torture that Greek is, of all styles, the least capable of bearing.

> The roof's unbroken line,
> The long majestic march, and energy divine,

has been destroyed that height of ceiling and ventilation might be given to miserable Law Courts that in every sense are unworthy of the sacrifice. A rugged sky-line has robbed the building of half its dignity—the "entire and perfect chrysolite" is broken. A new bridge in the neighbourhood of the jail will shortly be opened, and it is to be hoped that the new levels of roadway will be such as will give to Stark's great work a long desiderated elevation. The old Lunatic Asylum has been converted into a workhouse, and that, of course, necessitated many alterations and additions. Stark's plan was a rotunda crowned by a cupola, and with arms radiating from it. The arms have much outgrown their original proportion, and offices for this and that purpose have so clustered like parasites about the central building that the harmony which was first supreme is now crushed out. The dome—as original in its design as is the spire of St. George's Church—is, however, from many points still a "leading feature" in our stone and lime scenery.* The Hunterian Museum—an exquisite gem—is now as if it had never been.

> The solemn temple,
> Yea, all which it inherit, hath dissolved,
> And, like an insubstantial pageant faded,
> Left not a rack behind.

This is literally the case. Not only the seen but the unseen has been removed: the very foundation has been dug out.

> The deep foundations that we lay,
> Time ploughs them up, and not a trace remains.
> We build with what we deem eternal rock:
> A distant age asks where the fabric stood:
> And in the dust, sifted and searched in vain,
> The undiscoverable secret sleeps.

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* It would be ungracious to cast any reflections on the architects who have designed the alterations in the lunatic asylum and the jail. They were fettered by inexorable conditions, and could have little pleasure in their work. I believe that they all venerate the genius of Stark, and would much rather have commissions for new work than for altering his.

To quote to-day's newspaper, "a line of rails is being laid on the site of the Hunterian Museum;" in other words, there is now the railway "chair' where was once the seat of learning. Railway "sleepers" do not dream of art: the dome and portico were in the way, and the iron horse of Stephenson was a more resistless assailant to Classic walls than was even the wooden one of Epeus.†

With Stark's Hunterian Museum has perished an architectural work of the very highest merit. Can anything be done to save his admirable spire? The church itself from several circumstances—perhaps partly from parsimony, and partly from the situation being at the time of building on the very fringe of the city—is, except in the façade towards Buchanan-street, as bare as a barn, and I think few things could have given the architect greater pleasure than to have seen it as thoroughly swept away as is his Hunterian Museum. Indeed, it is the taking away of the church, and of the church only, that is really wanted, if the only object intended is to facilitate the traffic; and were the street-level of the spire pierced, as is that of S. Mary's, it might be made serviceable for several purposes—a receptacle of a statue or a drinking-fountain, a place of shelter from a passing shower or of safety from two passing omnibuses. This is, however, a minor plea; the argument for the preservation of the spire is its excellence in itself, and its value in giving a pictorial cast to its locality.

There are buildings, however, shorter-lived than even churches and museums. On the 20th of September last, in the neighbouring burgh of Hillhead, a "tenement" fell while it was being built. In its fall six workmen were killed, and at the last held Circuit Court of Justiciary, David Law, sen., and David Law, jun., they having acquired from the City of Glasgow Bank a right to erect said tenement, were tried for "culpable homicide and culpable violation or neglect of duty." The indictment set forth that "the walls were carelessly or insufficiently founded, and not built of sufficient materials; or the tenement was otherwise built in an unsuitable manner." After an examination of from forty to fifty witnesses—labourers, operative and master masons, civil and military engineers, timber-merchants, quarry-masters, architects, and although last not least, a measurer—the jury, after a deliberation extending over fifty minutes, returned a verdict, unanimously finding David Law, sen., "Not Guilty," and by a majority finding the charge against David Law, jun., "Not Proven." I subjoin part of the evidence of one of the witnesses for the defence, and allow my readers to deduce what they can from it. He deposed that he had received instructions from a gentleman who represented the City of Glasgow Bank, to "come and go" about the Messrs. Law's buildings; that he understood "come and go" that he was not to be too rigid in insisting on the work being of a first-class character; that he granted certificates for the building; that for the house which fell there was no specification, nor any statement regarding the quality of the work; that so far as he knew the work was not supervised by any architect; and that he understood that Law's sons were the architects. As, according to the newspaper report, this last statement was received with "laughter," it would appear that the proper functions of the profession are really beginning to be recognised. Whoever has been to blame, six lives have been lost, and at least the operative masons are dissatisfied with the verdict. On the evening of the 14th of January they held a meeting in the Trades Hall, at which it was resolved —"That this meeting appoint a committee, with power to add to its number, for the purpose of obtaining the moral support of the leading working-men of Glasgow and suburbs, with the view of bringing the Hillhead catastrophe, with the legal blemishes of the trial, significantly before the public, and to memorialise the Home Secretary for a special inquiry on the late decision." Now that the operative masons are taking action, it may be asked why was it that those operatives who deposed to the building being dangerous nevertheless remained to work at it? Had there been an attempted reduction of wages they probably would have left.

I said some time ago that the Clydesdale Banking Company intended to build new offices in S. Vincent-place. It has since invited one London, one Edinburgh, and two Glasgow architects to compete in making designs. I understand that each competitor is to be paid for his work. The site is on the north side of one of our widest streets, and hence affords an excellent opportunity for architectural effect.

Dr. Zerffi has been recently lecturing in Glasgow, Paisley, and Greenock. At Paisley he complimented the architect of the lecture-room (Mr. Honyman, of Glasgow), on its merits as a work of Grecian architecture.

The annual exhibition of the Glasgow Institute of Fine Arts will be inaugurated on Monday evening, 30th of January, by "a full-dress *conversazione*." Those who have been favoured with "a private view" say, as they have said for years past, that this is the best exhibition ever opened by the Institute.

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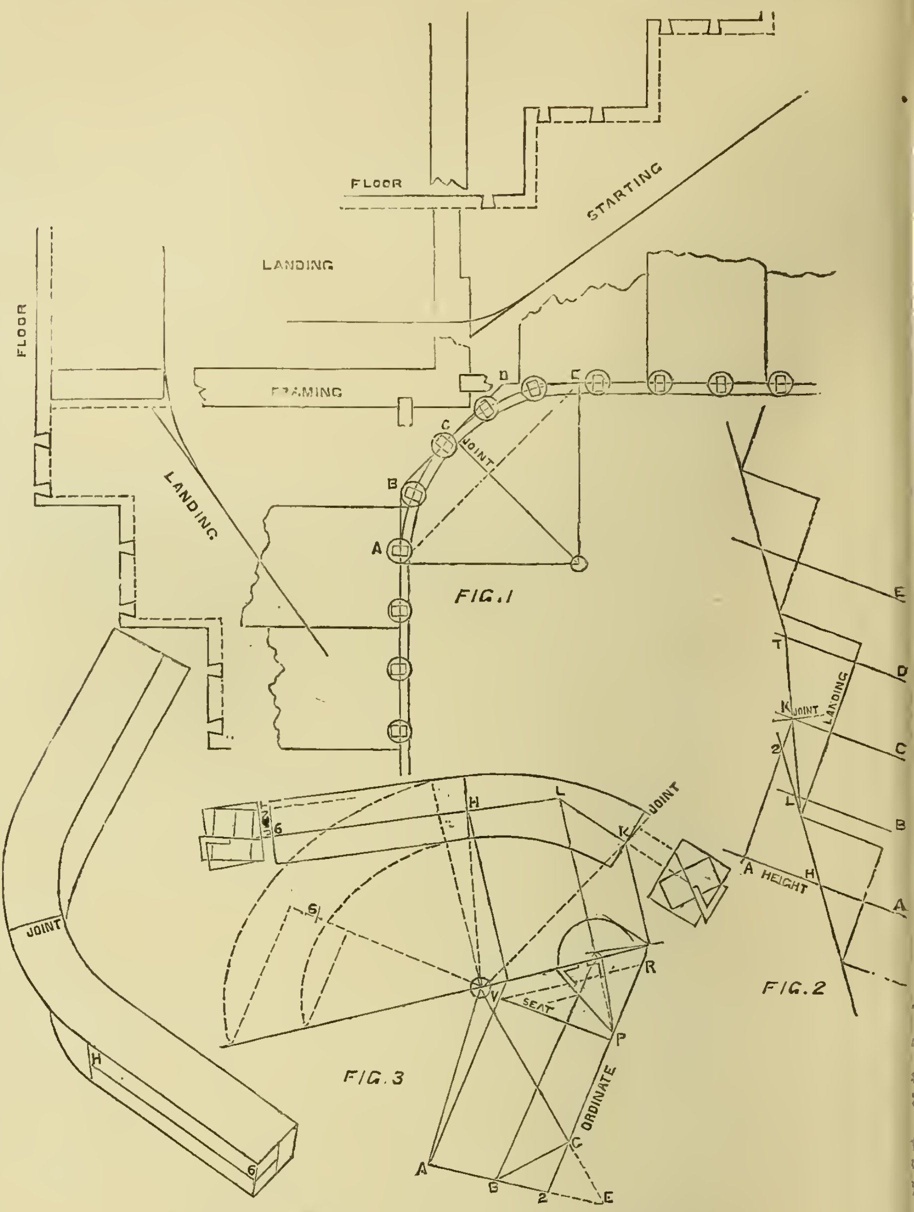
† Æneidos, II. 264.



NEW ELEMENTS OF HAND-RAILING.—PLATE XX.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page 64.*)

Plate 20. — Quarter-Circle Stairs—Wreath in Two Pieces.

Fig. 1 shows ground plan. Centre line of rail struck with a radius equal to one step and a half.

This arrangement gives three balusters on landing. The rail may be four or six inches wide. The concave side of wreath will present a curved line, having neither cripple nor deformity. The grain of the wood runs nearly in the same direction as that of straight shanks.

Let the quarter circle be divided into two equal parts. This makes the joint at C; so that one mould answers for both pieces of wreath. Draw tangent through joint, and square with C O. This gives four tangents of equal length, as shown by A, B, C, D, E. These are unfolded at Fig. 2.

Have the two square steps and landing stand in same position as those on plan. This done, draw pitches cutting at T and L. Join T L (and not the corner, as shown by mistake of engraver.)

Then the pitches H L K, on lower part of wreath, are equal to those above—showing that one mould answers both pieces.

Find height, by drawing from joint K, which gives A H. Next find a direction for ordinate by extending H L, cutting at 2, which gives A 2.

Fig. 3 shows construction of mould.

Let O A E be a right angle. Make its sides equal O A, Fig. 1. Join O E. Let O C equal O A. Make A B equal one of the tangents on plan. Join B C. Let A 2 equal coresponding letters on the right. Join 2 C extended. Let seat be drawn through O, cutting at P, and square with ordinate.

Next, draw from A and B parallel with ordinate. Make P R, the height, equal that of A H on right. Join R V. This is the pitch.

The elliptic curves are more readily obtained by drawing the pitch through O, and parallel with P V. Then extend seat, and let O S equal O A. This done, set off on each side of S half width of rail.

Now draw square with seat cutting pitch, and we have the wide end of elliptic.

The drawing is now ready to lay a board on for the mould. See that the tangents K, L, H agree with pitches on right having corresponding letters. Square sections show the joints and application of bevels. Cut the slab off the shank, and work it to bevel. Draw a line through half thickness of rail as shown. Continue this along beveled edge, and square with joint. Transfer H 6 to it. Mark pitch, similar to that shown on left.

Be careful to make no mistake in application of bevels. The mould, as it now lies, represents upper surface of lower piece of wreath. This answers for piece above, by reversing.

The strings for these stairs may be plank.

The cylinder staved.

The joints should be screwed from the back.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

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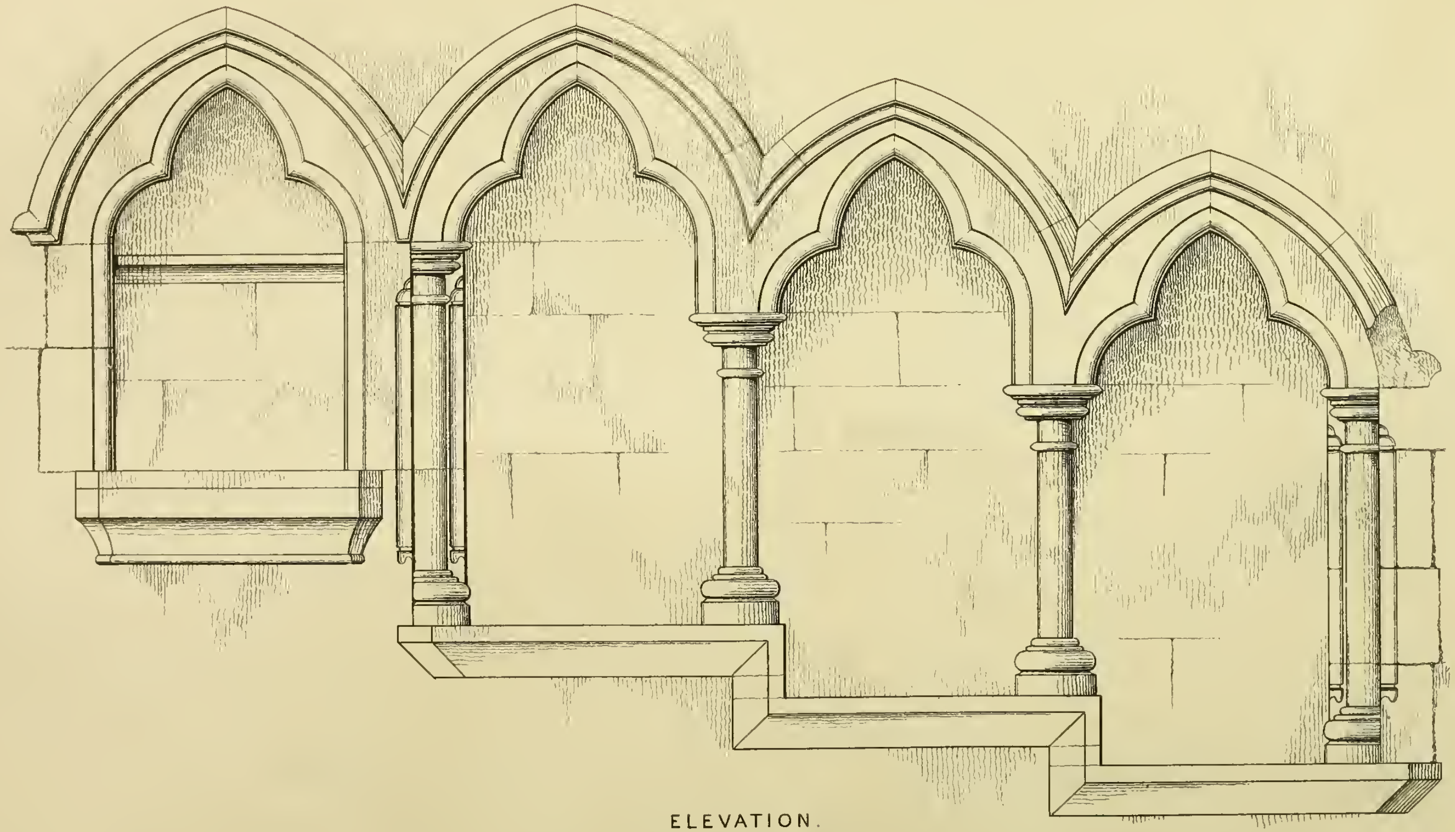
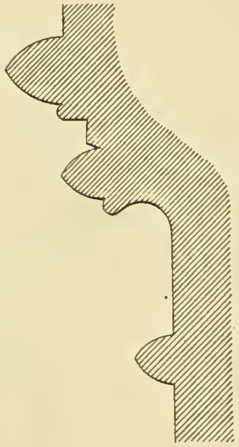
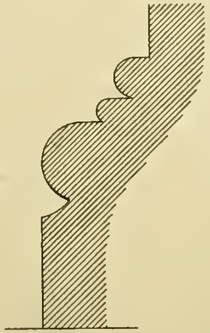
We hear that there is some likelihood of the removal of the Knightsbridge Barracks, a scheme being again under consideration for building first-class residences on the land it now occupies.



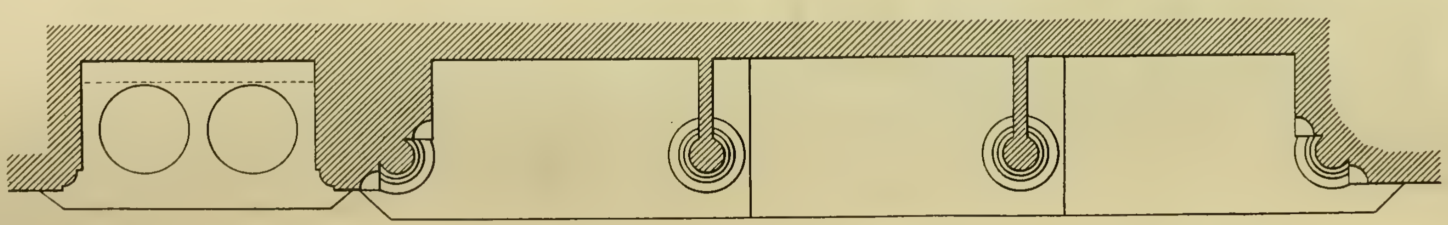
ELEVATION.



SECTION OF CAP.



SECTION OF BASE.



PLAN.

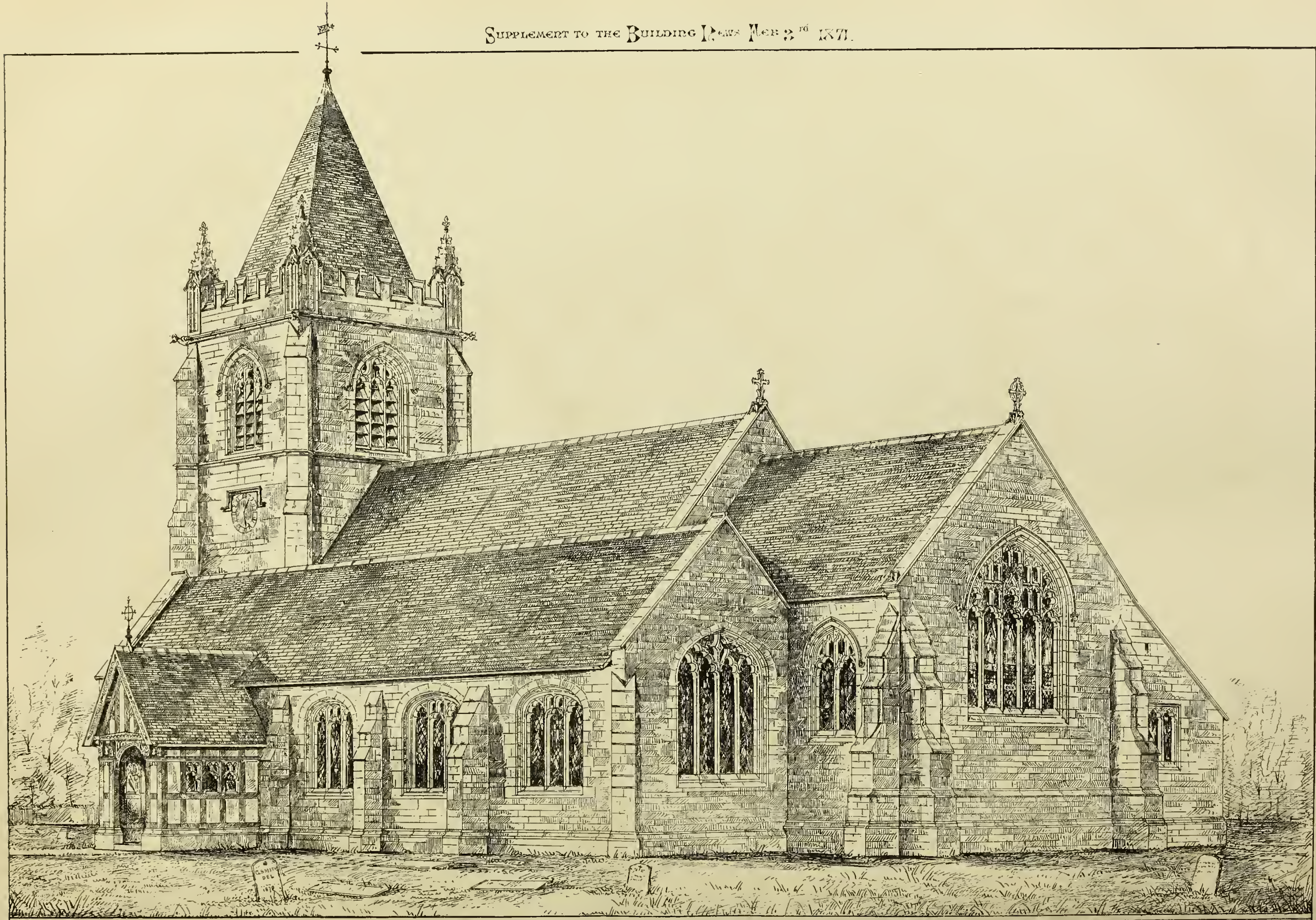
SCALE OF XII VI 0 I II III IV V VI FEET

Sedilia and Piscina, Preston, Sussex.

MEASURED & DRAWN BY G. HOLFORD.

Printed by Whiteman & Bass

Supplement to the Building News Feb 3rd 1871.



SAINT: ALBANS : CHVRCH : TATTENHALL : JOHN . DOVGLAS : ARCHT:

Furniture & Decoration.

DECORATIVE PROCESSES.

By "An Experienced Workman."

(*Continued from page* 70.)

WE have now to describe the operation or process of graining oak by the oil colour method. It is a commonly-received opinion amongst a certain class of architects and others that oak graining is a mere mechanical art, and that, as a natural consequence, any person of average intelligence may execute such works. No greater mistake could possible be made. It is true that numerous machines have been made and patented for effecting this purpose, an account of which we purpose giving in our next article; but with the single exception of one patent—which only professes to assist the grainer—the whole of them are mere make-shifts, none of them finish the work as they profess to do, but require the hand of the highly skilled workman to piece up and patch the work after them. There is also in all machine work of any description, whether applied to graining or any other process, an absence of the individual character or originality which marks the production of the individual mind. There is a charm and a feeling about work executed by the hand which gives it a value no mere machine work can possess. As we have before remarked, the grain and markings of oak are so varied in form that no two pieces can be found exactly alike. Now machine work, from its very nature, necessitates a repetition of pattern, which cannot be avoided. Hand-work, on the contrary, can imitate every variety and follow nature so closely that no two pieces need be alike. There is also in hand-work a wide scope for the inventive faculty and the exercise of good taste (both in form and colour) and skilful workmanship. As a rule, strong contrasts between the ground and the graining colour should be avoided. The figure and grain should of course be seen clearly, but only so clearly as to be distinct without interfering with the general and uniform quietness of tone necessary to fulfil the conditions required by the laws of harmony and good taste. Violent contrasts and gaudy colouring are always vulgar, brilliancy and richness of colour are not necessarily vulgar; it is the absence of the guiding power of knowledge and pure taste in their arrangement which degrades them to the rank of vulgarity. In this respect the colours of woods are the same as any other colours as regards decorative treatment, and require the same care in handling, or else discord is sure to result. Too much care cannot be bestowed in avoiding these errors in colour and form. We have before spoken of the importance of good combing, and of the various kinds of combs used; we now proceed to describe how the work is done. The graining colour is brushed over the work in the ordinary manner with a pound-brush, care being taken not to put too much colour on, or else it is very liable to be dirty. A dry duster is now used to stipple with, which, if properly done, will distribute the colour evenly; it is now ready for combing. In the real oak it will be found, as a rule, that the grain is invariably coarser on one side of the panel than the other; this arises from the very nature of the growth of the tree; it is, therefore, well to imitate this pattern, and in order to do so we take first a medium or coarse-cut gutta-percha comb, and draw it down one side of the panel; then use a finer one to complete it. This comb will leave the marks of the grain in clear unbroken lines from top to bottom of the panel. We now take a fine steel comb and go over the whole of the previous combing; but in drawing this comb down, we either move it in a slanting or diagonal direction across the previous grain, or draw it down with a quick and short wavy motion or curl; both the former and the latter motion will break up the long lines left by the gutta-percha comb into short bits, which of course represent the pores or grains of the real wood. It will be obvious that there are several other motions of the comb having the same end in view; and by using the gutta-percha or cork combs in conjunction with the fine steel an infinite variety of grain may be produced. Some grainers are in the habit of using the coarse steel combs with one or more folds of thin rag placed over the ends of the teeth; but this is a style of combing which has nothing to recommend it, and very much may be said against its use. A natural variation in the grain may be produced by one comb alone, according to the manner in which it is held. For instance, if we take a coarse or broad-toothed gutta-percha comb, and commence at the top of a panel with the comb placed at its full width: if drawn down in this position it will leave a grain of the same width as the width of the teeth; but if we start with the full width, and gradually turn the comb or slightly incline it to one side—that is to say, on its edge, we thereby graduate the grain from coarse to fine at pleasure, and by holding the comb at a certain inclination we may actually make very fine grain with the coarse comb. This style of combing is very useful for varying the grain upon the rails and stiles of doors or other woodwork, and for defining the joints, and a very great variety of grain may be thus produced. A very important point, requiring strict attention, is the formation of the joints in the wood, as much of the effect of otherwise good work is lost in consequence of neglect in this respect. In looking at a real oak door, the joints of the stiles and rails are clearly and sharply defined, not by any defect of workmanship, but by the difference in the run of the grain, the stiles being perpendicular, and the rails horizontal. The rails being cut sharp off by the stiles, show a perfectly straight line. The light also acts differently upon the two, simply because the grain or fibre of the wood is exposed to its influence under different aspects. This also tends to produce a difference in the depth of the colour of rails and stiles, and panels also. It will be evident that no imitations can be considered really good except they include these seemingly unimportant points.

It is a common practice for grainers to imitate a broad piece of heart or sap of oak upon the back rail of almost every door they do, and many of them are not even content with that, but daub the stiles over from top to bottom with it also. There is nothing so vulgar or in such bad taste. Now if the joiner in making an oak door was to put such wood into the rails and stiles, the work would be at once condemned by the architect, and very properly so too, simply because this part of the oak is not suitable for the purpose, and is never used in good work. We like to see the heart of oak well imitated, but it should only be done upon those parts of the work on which it would appear on a real oak door, namely, on the edges of the doors and on mouldings. On these parts the joiner cannot avoid it, because we see as it were two sides of a square; for it depends upon how the tree is cut into planks as to whether the board will show the grain and figure alone, or whether the heart and sap is seen. If we examine the stile of an oak door and we see grain and figure on the stile proper, we are sure to see heart or sap upon the edge of it. The wood may, of course, be cut so that we get both heart and figure together, but in this form it is very rarely used, except for boat building and for coffins, and never for doors. This fact should be borne in mind by the grainer; if it is, and he strives to assimilate his work to what is right and usual in the real wood, there can be no doubt but that he will produce better work, and it will be more in keeping with the real. There is a vulgar pretentiousness about what we may call the sappy style of work which is very undesirable.

The work being combed will now require to be figured. These figures, as a rule, cross the grain more or less abruptly, and of course of different shapes, sizes, and forms, a knowledge of which can only be acquired by study of the real wood. The figure may be wiped out with a piece of soft rag, held tight over the thumb-nail. This should have two or three folds over the nail, the superfluous rag being held by the other hand to prevent it hanging down and smearing the grain; and every time a figure is wiped the rag should be moved slightly, so that the same part of the rag will not be used twice, thus insuring clean work. It will often happen that the thumb-nail will get broken, or is too weak to stand the work; in these cases, or, in fact, in any case, a good substitute or artificial thumb-nail may be made of gutta-percha, thus: A piece of thin sheet gutta-percha is put into warm water, and while soft is wrapped around the end of the thumb up to the first joint. It is then pressed with the hand, so as to fit and take the shape of the thumb and nail. This cannot be done at one heating, but will have to be put into the hot water again, and the end pinched and squeezed into form to the shape of the nail, and to fit easy upon the thumb. When this gets hard it may be trimmed into perfect form with a penknife. This artificial nail will answer the purpose admirably if properly made; and even when the natural nail is good the gutta-percha will serve to save it from injury. Good figuring may also be done by using the blank end of the steel comb with a rag folded over its edge. We have also used a piece of gutta-percha to take out the lights. This should be square-ended, about one inch wide, and three or four inches long. Using this, instead of the thumb-nail, we have made very successful work of a certain class, but not of the best. Many grainers use a piece of thin horn, in shape something like a spatula, about three or four inches long and three quarters of an inch wide, with rounded ends, and quite flexible. With this tool the figure is cut or scooped out—we know of no other word which so aptly describes the motion required to effect this—a sort of quick, side-long motion, very difficult to describe and requiring a very considerable amount of practice before it can be worked with any success. There is, however, the same objection to this tool as may be urged against the gutta-percha for figuring, namely, that neither of them take the colour clean away, but leave an accumulation of colour on the edge of the figure, which is fatal to good work, and therefore we cannot honestly recommend the use of any method but the wiping out with the thumb-nail or its substitute. When the figure is wiped out, it will require to be softened. By softening, we mean the imitation of those half shades seen upon and about the figures in the real wood. Between and around the lights or figure in oak there is always a lighter tint of colour; this arises from the fact that immediately next the lights or figure the pore or grain is invariably darker than it is in the plain parts or spaces between the figure; and this is imitated by doubling a piece of rag into a small roll, and with the side of this the grain is partially wiped away, but not to the extent of taking off the whole of the grain. The grain must still be seen, but of course will not appear nor be as dark as it is on those parts on which it has not been disturbed; and this is exactly the appearance of the real wood. It is only by strict attention to these small matters that success is obtained.

We now come to a recent but most admirable system of graining oak by means of over-combing, which is worked exactly the reverse of any of the foregoing methods; that is to say, the figure is first wiped out, and the combing or grain is done afterwards, when the graining colour is dry, in this wise: The graining colour is mixed somewhat thinner than for ordinary graining, and is brushed over the work sparingly, leaving it just sufficiently strong to show a clear distinction between the ground and the colour. The light or figure is then softened by drawing the end of a flat hog-hair fitch or a small thin mottler across each figure, and slightly softening with the badger-hair softener. The figure is then broken up a little with fine lines across it in parts, such as may be seen in the real wood; but previous to wiping out the figure streaks of light should be wiped out and softened on one side of the panel or across the stiles, in imitation of the reflective lights seen in oak. The colour should also be partially wiped off the rails or stiles at their junction; this tends to define the joint. The colour is now let to dry hard, when it will be ready for over-combing,—that is combing or graining over the figure (hence its name), and this will have to be done somewhat differently to the ordinary combing. As thus: The colour is rubbed in as before, and combed solely with the gutta-percha combs, but these are specially cut for the purpose; they are best about 2in. wide. The first must be cut with teeth about three-sixteenths of an inch in width, the next one-eighth, and the third about one-sixteenth. The broad-toothed comb is first used, and must be drawn down the panel with a wavy motion in short or long curls; either will answer our purpose now. The next size of comb is then drawn straight down—the straighter the better. This has the effect of breaking the wavy combing into short and long straight bits, similar to the pores or grain of the real wood. Both the first and second combing may be varied by holding the comb in a slanting direction, and may be fine or coarse, according to the width of the combs used; now take a soft rag folded, and with this partially clear off the grain which runs over the figure, leaving only a sufficient quantity crossing the light or figure to be just distinguished exactly as it appears upon the figure in real oak. The grain is also wiped off in parts on the plain spaces between the figure, in order to break it up and take away any apparent formality. If this method be well and properly done, a thoroughly deceptive imitation may be produced, and except this end be kept in view no really good work will result. In combing a door or other work, we have before spoken of the importance of clearly defining the joints, and we may add that we very often see good doors spoiled from inattention to this point. It will often happen that the joints of the rails and stiles are not exactly level with the mouldings. Mouldings in some cases are planted partly on the stile; in these cases the joint will be a certain distance, as it were, up the centre stiles and inside the back rail, while in ordinary doors, where the mouldings do not project beyond the panel, the joint is not covered, but is uniform with the edge of the stile. Grainers are but too apt to disregard the difference between the two, and are thus led to make false joints, and in nine cases out of ten the true joint will in time open, and thus we have apparently two joints instead of one. The joints should never be made in any other position but where the joints actually occur in the wood of which the door is made.

(*To be continued.*)

WINCHESTER TOWN-HALL COMPETITION DESIGNS.

THE designs which have been submitted in competition for the proposed new Guildhall and public buildings include, as usually is the case, a variety of ideas, but few well-considered plans, and fewer still that can lay claim to that combination of essentials which is needed for the special object in view. In no case, it may be asserted, do we find the combined requisites of a well-arranged plan and suitable exterior treatment. In one or the other of these necessary conditions they all seem to us to err. And yet we would not speak disparagingly of a collection which numbers nearly 50 designs, and which necessarily embraces a large amount of thought, trained skill, and laborious execution. When we recollect that each of these designs is illustrated and explained by nearly a dozen drawings, and that the combined labour this collection represents may be estimated by years, not months only, a fair idea of the labour and expenditure entailed may be gained, and the corporation and citizens of Winchester may well congratulate themselves on this response to their invitation, which is even larger than the bait they held out could warrant.

The designs may be considered, for the purpose of review, first, as regards *arrangement*, and secondly as to *external character* or style; and they may be further divided or distinguished by the position assigned in the several plans to the Assembly Room, a feature of considerable importance, not only on account of its relative size in the structure, but its value as a local requirement, thereby entailing upon the architect much careful consideration. The positions assigned to the Assembly Hall are as varied as the cardinal sides of the quadrangular space at disposal. As six of the designs have been distinguished as "recommended," we will first consider their merits, real or assumed. No. 1, "Tria Juncta in Uno," has a compact plan, and the arrangement appears to be economical. The Assembly Room is provided on the 1st floor. The style adopted is a sort of Italian Gothic, freely treated. No. 8, "Caer Gwent," has also an Assembly Hall in the front, on the 1st floor, and the distribution of plan, though admitting of improvement, is good. The museum occupies the eastern side. The style is Gothic, and of not so expensive a kind as one which seems to have gained most favour. The front façade is rather heavily treated, though the gables of hall windows slightly breaking into the high-pitched roof are pleasing. We cannot admire the squat manner in which the side tower is terminated. No. 25, "Utile Dulce;" the plan or this design appears to have elicited some local commendation no less than its exterior treatment. Confining ourselves chiefly to the arrangement, there is an irregular and scattered disposition of parts which rather detracts from some good points internally. The hall is placed on the west side of a central corridor running nearly its whole length, and is approached partly by it, and also from the end. Ample means of egress are provided—a very desirable point—but we think the lateral corridor has some disadvantages. It prevents the hall being lighted on the corridor side, and its great length is architecturally a mistake, as it appears too lengthy and wasteful of space for the purpose it serves. The walls struck us as being very slim for the size of such a hall, and we hardly think the lighting confined to one side will be very satisfactory. The museum is located along the principal front, and occupies the upper floor. It is entirely lighted from a longitudinal flat skylight along the front roof, which might have been supplemented by side lights along the upper part of façade, which is now usurped by useless and unmeaning arcading. The style adopted by the author is Gothic of the English school, and the detail seems to be well studied. There is, however, a superfluity of costly elaboration lavished on the front elevation, and much useless and expensive ornamentation in the shape of angle turrets and other excrescences of doubtful character. The principal objection we have to the exterior is the jumbled way in which the upper portion of the central tower is notched into the roof and springs from the lower portion of tower, the attempt at originality here being particularly awkward and whimsical, so much so as to seriously mar the effect. The cost of this design, moreover, will, in our opinion, be sufficient to set it aside.

No. 26, "Manners makyth Man," has a very compact plan. This plan covers less area than any other design exhibited. The hall on the ground-floor is rather long, and the entrance, limited to one in the centre of its longest side, is too limited. The walls are excessively massive and contrast rather strangely with those of other plans. We think the author has not given sufficient space to his approaches and stairs. In other respects there seems to be careful study evinced. Externally this design is shown by a well-drawn outline perspective, evincing the hand of an artist. The design, however, has more of a fortress character about it than that of a building destined for civic uses, the centre tower being overpowering in its mass and height, and the grouping and severity of the masses generally are rather more picturesque than architecturally appropriate. Although not quite so much condensed in superficial area as the last, "Concentration," No. 27, has a remarkably compact and well thought-out arrangement. Forming a rectangular block, there is perhaps less lost room in this plan than any others. The hall is located along the back, and is amply approached by entrances at the east and north sides, though rather indirectly. The only fault seems to us to be the number of exterior steps required to gain the principal apartments, though it must be remembered an excavated basement on the intended low site for this building would be very questionable; probably the author had this in view. The conveniences of this plan appear to be more complete than any of the others. The proportions of hall and its roof are good, and the arrangement of the whole plan is, as we have said before, well considered, and fully bears out the motto adopted by its author. The external front of this design, which is in the Gothic style, has, perhaps, a somewhat commonplace appearance, but its defects in this respect, which are chiefly those of detail, are quite overbalanced by the merits of the plan and its general proportions. If the same amount of study had been bestowed upon the façade which the plan evinces, this would probably have been the most successful design of the whole collection. No. 38 (red star in circle) is a pretentious effort in the Italian style. The arrangement and proportions of this design are both wasteful in area and extravagant in the heights of assembly room and other portions. The author claims for his plan ample means of ingress and egress. He has truly outdone himself in this effort, for the area at disposal is completely squandered and intersected by ridiculously wide corridors crowding out all available lighting and air spaces. The superficial area covered by this plan is the largest of any. The Italian façade, shown by an effectively coloured drawing, with its extravagantly high and frittered centre tower, and the columnar wings of a commonplace type, broken cornice crowned by statues, is certainly ill-adapted for the Winchester site and surroundings, and far too costly. No. 46, "Faith," is illustrated by a carefully and elaborately got up set of drawings. The plan is hardly so well considered as some of those above noticed; the entrances are defective. The hall and council-chamber are cleverly managed as regards their roofing and lighting, while the style and treatment adopted is bold and effective. The vigorously-tinted perspectives display an effective tower and front towards the High-street, which contrasts rather favourably with many others exhibited. We think this design should have certainly displaced No. 38 in the committee's selection of the number recommended. There are a few other plans that deserve a passing notice, such as No. 2, "Perseverando," in which the arrangement is condensed and compact: No. 3, not a badly conceived plan in general, but in a very heavy Gothic style of treatment, with a tower cumbrous and unrelieved. The same author's Italian design is better. No. 9, "Alpha," has a plan capable of improvement, the corridors being too wide. The style is Gothic, and the front is relieved by an arcade open to the street, and generally this design is characteristic of the purpose of a town-hall. 13, "Caer Gwent," has a plan on a good principle, but not so happily developed; 14, "Justitia," has a well-considered plan; 16, "Rufus," has a miserable plan in the Tudor-Gothic style; 11, "Civis," has a badly-arranged and patchy plan, with a preposterously high tower. The drawings, however, are elaborate and striking.

The adaptation of style to site is a question of some importance in the selection of a design, and should be taken into account after the plan. The Winchester Corporation have selected a site which demands the exercise of some judgment and taste. Fronting the widest, flattest, and most open part of their picturesque and declivitous High-street, it is of primary consideration what character of structure would best harmonise with the adjacent buildings and scenery. We say "harmonise" in a relative and local, not absolute sense. Essentially of an irregular and picturesque kind, it becomes a problem of some difficulty to the architect whether a style partaking of rectangular masses and horizontal lines would contrast favourably with a situation so sudden in its abrupt lines. It is true the particular site is a flat one, but the objects in proximity are of a character that we think require some degree of assimilation in the style of the town-hall. We think on the whole a Gothic treatment the best, and those designs which conform to the continental Hotel de Ville type of structure, having a prominent and well emphasised tower, either in the centre or at the side, seem to us to adapt themselves most favourably. Ere this notice is in the hands of our readers, the selection of a design for this town-hall will have been determined, and we hope satisfactorily and with the guidance of a qualified judge. There are many other designs which we noted, but of which our space forbids notice here—some artistically conceived, as Nos. 18, 19, &c., but failing in essential points of design; while some others, as Nos. 20, 21, 29 and 45, would have contributed more to the credit of the competition by their absence.

[For telegram stating the result of this competition see p. 79.]

BUILDING NEWS SKETCH BOOK.

SEDILIA AND PISCINA, ST. PETER'S, PRESTON, SUSSEX.

THE sketch is taken from an interesting little church at Preston, Sussex, situated about one mile north of Brighton. The Sedilia and Piscina are in a very good state of preservation; the style is Early English (about 1230.) On the east wall of the nave, on either side of the chancel arch, were discovered, not long since, some frescoes, representing the murder of Thomas-à-Becket, and S. Michael weighing the souls of the departed, and are remarkable for the freshness of colour, and give a good idea of the state of art at this period. The church, fortunately, has undergone no alteration whatever.

GEORGE HOLFORD.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

LECTURE XIV.

THE fourteenth lecture of this course was delivered on Tuesday week last. In commencing, Dr. Zerffi proceeded to enumerate various examples of construction in the different styles he had mentioned in his previous lecture. Commencing with the oldest, or Proto-Doric style, he alluded to Stella and Hermes, in which the first attempts to construct Doric columns could be traced. The contractura in these columns was towards the base. There also existed façades of rock-hewn cellas or graves, of which those of Nouchia in Etruria and a rock-hewn grave at Nikoleia in Phrygia, were notable examples. In these constructions stiffness and austerity of form were the prominent characteristics. The columns were in some instances fluted, in others smooth, and the shafts marked with one or three rings. The oldest of temples, that at Cardacchio in Corfu, which might almost with equal justice be assumed to have been merely the cover of a well, was nearly proto-Doric in form. The pillars were slender and gently tapered, the capital strong, the echinus projecting, and the neck decorated. The distance between the columns was great. The frieze was without triglyphs, the pediment very high, and the fluting of the columns very flat. These were all the structures that could be traced prior to the seventh century B.C., when we had the Lax Archaic Doric style, of which the temples of Assos, in Asia Minor, and the Tavola dei Palladini, at Metapont, were examples. This style differed from the Proto-Doric, inasmuch as the distance between the columns was less, the columns themselves were shorter but more tapering, and the echinus boldly protruded. There were three incisions at the neck of the column. In the older constructions in this style the entablature was more than half as high as the columns supporting it, and the columns had twenty flutes; in the later forms the entablature was a little less than half the column, which had sixteen flutes only. The kymatium, or cyma, was round, but lighter than the Proto-Doric. The temple of Demeter, at Pæstum, might well be considered as belonging to this period, were it not for the fact that the columns were so closely set. In the Stern Archaic Doric style (seventh and sixth centuries B.C.) were the temples of Selinus and Ægina. Though, as far as the architecture of these two buildings was concerned, we might assume them to have belonged to the same period, they widely differed in their sculptural ornamentation. In the former temple the facial expression of the statues, the Asiatic fashion of the hair and beard, together with the conventional treatment of the drapery, led to the conclusion that it had been contemporary with the Monuments of the Harpies. In the latter, however, later influences could be traced. The special characteristics of this style were stiff outer columns, a high and strongly protruding abacus, which was one-sixth broader than the intercolumniation, a stiff and flat echinus, scotia, and rings below finishing the flutings of the shaft. The columns of the pronaos had sixteen Ionic flutings. The tapering was very considerable, being ·685 of the lower part, and the tapering in the interior columns was still greater. The marvellous temple at Ephesus (which the lecturer fully described in his former course of lectures) influenced the Greek artists, and stimulated them to greater exertions. The temples of Artemis at Syracuse, and that at Corinth, might be looked upon as attempts to rival that construction. Their dimensions were colossal, and though the old proportions were observed, the intercolumniation was as narrow as possible. The height of the entablatures was half that of the columns. The ruins of the temple of Corinth were generally accepted as being the most ancient remains of Doric architecture. The finished details and the treble incisions under the capital would, however, have justified archæologists in placing this building in the period in which the temple of Ægina was constructed. At the same time, these two temples presented examples of the transition to the Pure Doric style (fifth century B.C). As examples of this style we had thirteen temples—viz., those of Zeus at Selinus; of Heracles at Agrigentum; of Zeus at Agrigentum; of Poseidon at Pæstum; of Athene at Syracuse; of Juno Lacinia, at Agrigentum; of Concordia at Agrigentum; the temple at Segesta; the southern temple on the western hill at Selinus; the southern temple on the eastern hill at Selinus; the temple on the Island of Ægina; that of Zeus at Olympia; and the temple at Bassæ. Having mentioned the chief characteristics of these buildings, the lecturer passed on to the Attic-Doric or Periclean style (fifth century B C.) He said that in this style we found the spiritualisation of Doric power and typical regulation united with Ionic grace and individual expression. The old Doric might be distinguished as the sandstone or limestone style, and the Attic-Doric as the marble style. The treatment of the forms differed with the material. Those in marble were more elegant, the columns lighter, and the ornamentation more refined and profuse. Amongst the temples in this style were those of Theseus at Rhamnos, the Parthenon, &c. Even prior to the period of the Macedonian Doric style (four centuries B.C.), the Doric style ceased to be employed exclusively for temples, and was also used for profane buildings. At first the Ionic and subsequently the Corinthian order became more prevalent, in accordance with the increased refinement of the people.

The Ionic order was slender and beautiful, and was undoubtedly perfected by Greek taste. Dr. Zerffi here entered in detail into the characteristics of the three styles into which he had divided the Ionic order; and having dwelt at some length on the Corinthian order and its styles, he proceeded to the consideration of the ceramic art of the Greeks. He said that in speaking of prehistoric pottery in former lectures, he had referred to the principal styles. After form, strength and durability of material was the most important desideratum. This might be attained in three ways: (1) by simply drying the pottery in the open air, or in the sun; (2) by exposing it to a gentle heat; and (3) by exposing it to a more intense heat. The method of glazing pottery, he observed, appeared to have been altogether unknown to the Greeks; at any rate, it was not used by them, and hence the earthen vessels of ancient times were not entirely impervious to water. On the other hand, there were advantages connected with these porous vessels which had been subjected to a gentle heat only, as they resisted sudden changes of temperature better, and did not break so easily as those which had been more thoroughly baked. In making pottery which would be subjected to the action of intense heat, an entirely different treatment was required. The plastic forms should be well chosen, and such as might suffer through baking should be avoided. Metal or bronze motives, Telamons, &c., should not be imitated in ceramic works, for in such cases the material would be employed for a purpose for which it was not at all adapted. The style of the ceramic artist should be dependent on the three principal properties of the material used, viz., plasticity, homogeneity, and capacity for hardening. Ceramic art, said the lecturer, had developed itself to a certain extent in analogy with the geological formation of the earth, but in an inverted ratio. The oldest pottery (prehistoric) was coarse, and its material was provided by the latest formation of the earth, *i.e.*, the soil itself. Chinese ceramic pottery, however, formed an exception to this, as the Chinese people had used kaolin, which was of the primary formation. The productions of the mediæval potters, such as faïence, were made of materials obtained from the secondary formation of the earth's crust; and for the last three centuries we had made our ceramic works of materials found in the oldest formation. The oldest specimens of pottery much resembled each other, and it was difficult to distinguish the productions of Kelt, Teuton, Scandinavian, Greek and Italian, from one another. In such productions as assumed the trochoid form, there was evident a plastic tendency to strengthen the wave-like forms by additional ornamentation. This ornamentation consisted in geometrical figures, knobs, astragals, and guilloches. The Greeks highly improved upon this rude pottery. Their style and execution presented the greatest contrast to the productions of other nations. The lines were more defined, and the symmetry more perfect. The ceramic art of the Greeks flourished most successfully at Samos, and in other islands of the Archipelago. Its most striking characteristic was at that time that it ignored the use of the wheel. In other countries, where the wheel had been used from time immemorial, we should find that it had had a detrimental rather than an improving effect. In conclusion, Dr. Zerffi said he divided Greek pottery into two classes—the oligochromatic (from *ολιγος*, small, and *χρωμα*, colour), and the polychromatic. The first of these he subdivided into two sections:—(1), the Archaic; and (2), the Hellenic. He also remarked on the fact that the greatest Grecian sculptors had modelled designs for ceramic works, and had even practised the art themselves.

LECTURE XV.

Dr. Zerffi delivered the fifteenth lecture of the course on Friday afternoon last. In this lecture he concluded the subject of Greek ceramic art, which was left unfinished in the last lecture. After recapitulating the principal points respecting Greek ceramic art referred to in the preceding lecture, the lecturer drew attention to the evident traces of manipulation in some of the specimens before the audience. The introduction of the wheel and of glaze, which had taken place at a later period, necessitated the preparation of a firmer paste. This paste had to be subjected to great heat, in order to enable the artist to produce a greater variety of vessels. The transition from rude to improved works had taken place slowly and by degrees; in the beginning the paste had been coarse-grained, the ground colour yellowish-grey, but subsequently it became fine and the ground colour homogeneous. The glazing had been altogether dead. The black colour (not pure, but with a brownish tint), had been spotted, proving a want of experience in baking. In addition to the black glaze, violet, brownish-red, and white tints had been applied, but they had been badly fixed on the paste. With the exception of the pethoi (or wine jars) found at Thera, the vessels of the Archaic style were generally of moderate size. They were broad, compressed, the curves boldly interrupted, and the extremities abruptly connected. The ornament did not form, as yet, an integral part of the vessel. The general forms were pots, cups, flasks, &c., the oldest having been ornamented with points and simple lines drawn all over the vessel. At a later period the ornamentation had been restricted to the bulge, whilst rings, frets, or meanders had marked the upper or lower parts. Plant forms had then been introduced in ornamentation. A further progress was to be observed in the use of animal forms, which surrounded the vessel in parallel circles. In addition to animals and monstrous Asiatic combinations, human figures were also used. In studying these ornamentations a clear progressive development in the whole culture of the Greeks could be perceived. The Hellenic or pure Greek style comprised all the later productions of oligochromatic pottery. It essentially resembled the Archaic style, but possessed a greatly improved ornamentation. The paste was harder and firmer, the colour softer, and the best clay was employed. The black had a greenish lustre, and was without spots. Smoothness and elegance of form, and delicacy in the decorative ornamentation, render this style most interesting. The figures were no longer cut in with the needle, but were laid on with the brush with great accuracy. The frame usually employed was dispensed with. This was an advantage, as it gave greater scope to a more connected ornamentation. In examining the general features of the Greek pottery of this period, we found that it was in many instances not so perfect in point of detail as in the total. The productions were the result of the freest, most conscious, and most accomplished mastery of all the conditions inherent in the material employed, and in the purpose of the product. In the first, or Archaic, period, the artist appeared to be struggling with his material, but in the second, or Hellenic, period we found him master of it. The curves became less bulky, and the transition from concave to convex lines less abrupt. Though a tendency to over-ornamentation was still to be observed, it was checked by an improved taste. A regularity in decoration was next to be perceived, more especially during the period from the Pisistratides to the Persian wars. All the productions of this epoch had been thoroughly correct, but rather stiff. That the vessel should form in all its parts one continuous line, with as little interruption as possible, became a law. The influence of the Doric-Ionic or Attic style, however, corrected this stiffness, and Greek ceramic art reached the very acme of its development. The decorative motives were in accordance with the gradual progress. The Asiatic types of monsters were used as frieze ornaments, and soon gave place to garlands, frets, or to useful domesticated animals. The creations of over-heated imaginations were replaced by heroes, such as Perseus, Theseus, Heracles, &c., always representing the triumph of valour, beauty, and honesty, over barbaric licentiousness, dishonesty, and despotism. There remained now only the polychromatic style to be described to conclude the subject of Greek ceramic art. This style had originated in a direct line from the first attempts in the art, when white pipe-clay had been painted over. The most celebrated specimen of the style was the vase of Arkesilas. The colours employed were prepared from red, violet, and yellow oxides of iron. During the period which corresponded to the introduction of marble in architecture and ivory in sculpture, we found these highly-coloured and richly-decorated vases. The paste was fine and originally white, and the colouring encaustic. It appeared that not only mineral pigments and metallic oxides, but also other colours could be fixed on the thin paste, requiring only a slow fire. Greek pottery was one of the most important aids to the study of Greek social customs, fashions, and even manners. The pottery, as Dr. Zerffi had previously stated, embraced no less than seven centuries of national development. In examining carefully the various representations on the different vases, we might trace two distinct fashions among the Greeks—the Doric and the Ionic. Simplicity, sternness, and austerity marked the Doric; whilst elegance, taste, refinement, and symmetrical ornamentation characterised the Ionic. Subsequently the Attic-Ionic had been developed, joining the two fashions into one of the very highest artistic perfection. After the age of Pericles a kind of over-ornamentation prevailed, and with it degeneration, corruption, and dissolution set in, socially, politically, and artistically.

To enable us to understand Greek sculpture an acquaintance with the dress of the nation was necessary. Dress, with the Greeks, had two objects—to disguise and to reveal. A linen garment, oblong in shape, was used as underclothing, and a square woollen one as cloak, mantle, shawl, or coat. The linen was white, and the wool (especially with the Dorians) tinted yellowish or brown. At a later period both linen and woollen stuffs were dyed by the Ionians. With the Dorians the dresses for both sexes were alike, but those of the men were shorter and less ample. The principal garment was the cloak, which was generally thrown over the left shoulder, leaving the right arm free. Sometimes it was thrown over both shoulders, thus beautifully draping the bust. This cloak rarely reached below the knees. The linen under-garment was only sewn on one side. Sleeves were not used till Asiatic customs had been introduced. The under-garment for women was very long and fastened by a girdle and then drawn up, thus falling in beautiful folds round the waist. The cloak for women was identical in appearance with that of the men. The Attic-Ionic fashion preserved the same principles, but the women were more wrapped up, and the under garments of both sexes had sleeves. When at rest the hands were hidden, and in speaking the left arm only was used to give emphasis to the oration. Some general observations on Greek dress, as compared with the costumes of the present day, concluded the lecture, which was illustrated with numerous specimens from the magnificent ceramic collection of the museum.

LECTURE XVI.

The sixteenth lecture of the course was delivered on Tuesday afternoon last. The lecturer commenced by observing that he would continue the subject of Greek dress, and also describe some of the weapons, customs, &c., of the Greeks, in order to pave the way for the consideration of Greek sculpture. Both upper and under garments, he said, had been fastened at the shoulders with pins, buckles, or other ornaments, in the manufacture of which the Greeks had excelled. The stephane, a kind of diadem, had been considered the fittest head-dress for women. It was either a broad or narrow ring, pressed deeply on the brow, and had a broad ribbon which confined the hair at the back of the head. It was to be observed that with the Greeks a low forehead in women had been considered a beauty. Great attention was bestowed upon sandals, though boots were also known. They were made of the finest purple leather, and ornamented with embossed work in gold, silver, and other metals. At a later period the character of the sandals had changed, as they covered the upper as well as the lower portion of the foot, and so partook more of the nature of the shoes of our own times. Little boots were also in use, and the men ornamented their sandals, shoes, or boots with a half moon. This probably originated in a superstition that the emblem of Diana would protect the wearers from injury. With regard to the mantles of the Greeks, there had been differences of opinion amongst archæologists as to whether they had been square or round. Winckelmann, notably, had asserted that they had been round. Dr. Zerffi said he was inclined to think that both opinions were correct, as he believed the Greeks had had their fashions, which were subject to change. These cloaks had been provided with tassels which were filled with lead, and thus served to make the drapery hang in elegant folds. In many instances the women had an upper dress over the under-garment in addition to the cloak. It was made of two square pieces, sewn together, and ornamented with frets, meanders, &c, but had no tassels. The girdle used by women was worn immediately below the bosom. The Amazons had formed an exception to this rule, as they had worn it round the waist, like men. Venus alone was provided with two zones or girdles, and these were shown in the beautifully-draped Venus which had been in the Palace Spada, and afterwards in the possession of Lord Egremont. The lower girdle (also called the girdle of Venus) was distinctive of the goddess of love. The women wore veils, which must have been exceedingly fine in texture, as Homer had described them as cobwebs. Caps, which had been arranged in folds and fastened by a ribbon, had been worn by elderly women only. Straw hats, similar to those of the Italians of our days, were also worn. Men had their hats of felt, which were tied beneath the chin. The dresses of the men had, in general, been simple, but they paid great attention to their hair, which hung down in long ringlets. They also allowed their beards and mustachios to grow; the Spartans, however, had shaved the upper lip. The Argives alone had worn the hair short, after their defeat by the Spartans, and it was only with Alexander the Great that this fashion, together with that of shaving all hair from the face, had become general. The women were accustomed to dress their hair very simply. It was rarely or never cut, except in the case of widows, and children who had lost their fathers, and was generally confined in a net. Rings were worn on the third finger of the left hand, and had been of iron with the Spartans, and of gold and precious stones with the Ionians. The cane was also an ornament with the Greeks, and had been simple or adorned with an embossed knob. Ear-rings were worn by women, and sometimes (though rarely) by men; the Achilles in the library of the Vatican had them. Bracelets were in fashion on the upper and lower parts of the arm and above the ankles; they were generally in the form of serpents or of twisted bands. When the Greeks degenerated they had worn silk under-garments, and upper-garments of purple wool and often of gold-stuff. The weaving of gold with other materials had been introduced by Attalus. The lecturer next proceeded to enumerate the colours peculiar to the different gods and goddesses, and went on to say that the Greeks had uncovered their heads when meeting acquaintances or superiors in the streets. He also described the Phrygian cap, and said gloves had been in use, as several figures on burial urns might be seen with them in their hands. Passing on to notice the accoutrements of the Greeks, he said that these had consisted of the helmet, the breast-plate or cuirass, and greaves. The breast-plate was either of linen or of metal. Those of linen were prepared by soaking the material in strong wine or vinegar, and then folding it eight or ten times; they were put on whilst still wet, and thus took the form of the body, showing the muscles in a very perfect manner. The breast-plates of metal were beautifully embossed. The helmets were not only of metal, but also of softer materials. This could be seen in a statue of a hero with a helmet crushed under his foot at the Palace Farnesi. This helmet had most probably been of leather or felt. The greaves had differed but slightly from those worn throughout the Middle Ages. They were of thin bronze, and ornamented with lions' heads at the knee. Their principal object was the protection of the shin-bone. The lecturer concluded by describing the weapons used by the Greeks. These had consisted of the spear, which varied in length from 5ft. to 8ft.; the two-edged sword, the blade of which had been first of flint, then of bronze, and finally of iron; and the shield, which was richly ornamented. The sword had the simple form of a cross. The club was not used after the time of Pisistratus. The archers and slingers were generally slaves, it having been thought to be beneath the dignity of a Greek to fight unless in a hand-to-hand encounter. Horsemen (who were but few in number) had been armed with spears from 8ft. to 9ft. in length, and with long swords. The geographical position of the country, which always influenced military organisation, did not render mounted soldiers necessary, and it was only after the retreat of the ten thousand under Xenophon (in the fourth century B.C.) that cavalry had been generally introduced.

Greek furniture and the first principles of sculpture will form the subjects of the next lecture.

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ARCHITECTURAL ASSOCIATION.

AT the usual fortnightly meeting on Friday evening last, Mr. Rowland Plumbe, F.R.I.B.A., Vice-President, in the chair, Messrs. C. J. D. Guy and E. M. Forster were elected members. Mr. J. S. Quilter, hon. sec., having made several announcements, which will be found in the first paragraph of "Our Office Table" in this week's Building News,

Mr. T. Roger Smith, F.R.I.B.A., read the following paper

ON LONDON AS A FIELD FOR ARCHITECTURAL STUDY.

London is not—and it is as well to avow it from the first—a favourable field for architectural study. It is so very mixed: it includes so much that is devoid of all character, so little (comparatively speaking) that can rank as architecture. London is, moreover, so very vast, so bewildering, and so perplexing in its extent, that it is difficult to concentrate the attention, and to select or to grasp any instructive group or series of buildings; and, worst of all, to those of us who live and work here, London is so familiar, and to many of us so distasteful, that it appears difficult to see how any lesson can be obtainable out of it, or, at any rate, any lesson we may learn with pleasure. It is no doubt easier by far for a student of architecture to learn his art from single buildings, or from striking towns and cities visited for the express purpose of study, than to pick out from the vast mass of heterogeneous materials which compose a city like London those which shall be serviceable to him. If it were a question of choosing what city of all Europe or all England I should recommend to you as the most likely to be useful to the searcher after striking architectural examples, such as none of us could well miss or easily mistake, I do not think London (notwithstanding all I may have to say in its favour) is the place I should name as likely to be advantageous, except possibly to those whom a great deal of previous experience and travel has fitted for the mature study of the mixed field which the English metropolis presents, and who know well how to winnow out the wheat from the chaff. But the imaginary case of suggesting a place to go to is not the actual one. Here we are, all or very nearly all of us anchored here, working in London and living in or round London. The museums libraries, galleries, public lectures, streets, squares churches, clubs, and mansions of London are abou us, and are the only advantages open to many of us and whether we choose it or no, some of them are every day exercising some sort of influence upon our taste and our practice as students and practitioners of architecture; while the compact and striking series of examples which our cathedral towns or the cities of the Continent afford us are only reachable to many once or twice a year for a brief period, and not always that. Do not let me be misunderstood, however. Nothing that I am going to say should be taken as meaning that an architect can be educated without travelling, especially if he be a man of ordinary stuff. I hold it to be essential to our fit training that we should travel and sketch—aye, and that we should keep up the habit of travelling and sketching, just as it is essential for a surgeon to dissect or for a barrister to attend the courts. But still there is so much, so very much, which might be learned (even by a young student) in London; and it occurs so seldom that any one appears to profit as he might by studying London, that I have desired to point out to those who are rooted to this city for the greater part of the year that there is more good material for study within their reach (though not always *easily* within reach) than could be thoroughly exhausted even by years of study. It has seemed to me additionally worth while to attempt this, because, as I have said already, London is, in fact, influencing us in some way. If we are in the habit of glancing carelessly at its fine buildings without admiring them, or are familiarizing ourselves with its bad buildings without disapproving of them, we are blunting our perceptive faculties and doing ourselves harm, or, at the best, are missing opportunities of gaining good, instead of turning them to account and making the best of our surroundings.

It appears to me that an architect seeking to begin to learn something from the examples round him in this city is very much in the position of a person introduced for the first time to some magnificent library, such, for example, as that of the British Museum. The more previous knowledge he has the better use he can make of what he sees. A ripe scholar, anxious for information on certain points, will know the names of the authors he wants to consult, will find speedily whether they are on the shelves or no, and will be at home in the library in a few minutes. Such an one does not need to trouble the librarian greatly, and, in the same way, a man who knows architecture well, who has seen many cities and studied many books, will not require that any one should point out the lions of London, or even the lions' whelps, to him. Those, however, who are circumstanced as (I think I may safely say) the majority of the members of the Architectural Association are—that is to say, who are in the early years of their study of a very wide and complicated art—may bear with a hint or two, and when they can find a guide (one far more efficient than the present speaker can be, especially in this brief paper), would do well often to consult him, just as a novice entering upon the use of such a library as I have supposed would do well to get a literary friend to tell him what are the books he ought to make most use of.

An architect's business is to build, substantially, suitably, and artistically, and he requires, accordingly, to learn how to construct, how to arrange, and how to design. Of these three things, arrangement is more easily learned and practised on paper than the other two, and the practice of a good office will go a long way towards enabling a clever man to learn how to manage a plan conveniently. The case differs, however, with construction and design, and it is on the scaffold that construction is best learned, and by means of the sketchbook that the materials, and, to a great extent, the methods of design, are obtained. It is chiefly, almost wholly, this last division of our studies that will occupy us tonight, for the advantages in the shape of buildings in progress which London constantly offers to students of construction are too obvious for me to need to enlarge upon them at any great length. What a student will find in London to assist him in learning to design (exclusive, of course, of books, classes, lectures, and office routine, which are beyond my present subject) may be said to include (1) examples of good buildings to study, mixed buildings to criticise, bad buildings to avoid—these last, unfortunately, in great plenty—and (2) objects of art, or architectural specimens, fit either to improve his taste or to increase his knowledge of the features of buildings or of decorative art. I purpose to consider museums first and then buildings, both, as far as possible, in chronological order—usually the most convenient arrangement of architectural matters—and we shall consequently inquire what ancient examples, what Mediæval ones, and (to some extent) what modern ones are to be found in London.

Of ancient architecture (if we mean thereby the actual buildings of the Egyptians, Greeks, and Romans), there is none, saving a few Roman pavements, the best of which is that found in Leadenhall-street in excavating for the foundations of the late India House. Of specimens of the art of those nations, features and decorations of their architecture, and reproductions of their buildings, there is a wonderful amount in London. The monuments of Egypt present to us the most remarkable examples possible of grandiose simplicity; they are remarkable for the graceful beauty of single features and for their skilfully-applied surface decoration, and they are still more remarkable for their conventional treatment of statues intended to combine with or form part of buildings. You will find at the British Museum, and Sir John Soane's Museum, many specimens of the statues I refer to, in which the pose is thoroughly symmetrical and stiff, and most of the anatomy is only hinted at or indicated in what is termed a conventional manner. I believe that it would well repay a student's trouble if he were to examine *all* the statues, and to draw one or two of them carefully. The use made of these statues, the surface-decorations, and some of the varieties of capital, are all to be seen well illustrated in that neglected but magnificent architectural museum, the Crystal Palace. I shall have again and again to refer to this collection, and may therefore say here, once for all, that it is, I believe, quite the finest in Europe, yet so much over-looked that I never saw a student drawing there in my life except myself; but, as far as my own experience goes, no difficulty will be thrown in the way of any student desirous of studying there. At the Egyptian Court of the Crystal Palace, I would advise you to try and form some idea of the value of the repetition at regular intervals of the same ornament; of the powder of broad vast masses, as shown in the façade imitated there; and of the grace of the capitals and colouring. These last might be well sketched there, though, as far as concerns matters which can be studied elsewhere, I may as well recommend you as far as possible to draw at the Architectural Museum, as a more studious place. No doubt all this is imperfect and fragmentary knowledge, but it is a most valuable addition to what can be got from books or lectures; and a resolute, energetic student, desirous of making himself familiar with those points of Egyptian art which are likely to be of value in forming his taste and guiding him in practice—not, of course, teaching him to do buildings in the Egyptian style, but to introduce into the work he does in a modern style those qualities in which Egyptian buildings excel—will find material enough within reach. To such a one I especially commend the conventionalised statues. Passing by the Assyrian art, of which fragments having the deepest interest to the antiquary abound in London, we come to those specimens of Greek art which London can offer; and here I need hardly tell you the national collection and the Crystal Palace vie with each other in affording the student an opportunity of study of the most remarkable description. You can see not merely casts, but the actual sculptures themselves, which were the most perfect work of the most consummate artists the world ever saw, and you can in their vases see specimens of the perfection of refined form and of subtle surface decoration. My impression is that stay-at-home travellers will do well to concentrate such attention as they can bestow upon Greek art upon the sculpture and carving, for the simple reason that, in this climate, and with stone to build in, it is simply impossible to emulate and almost even to understand the beauty of so subtle a thing as a Greek building erected in marble, seen under the bluest skies, through the clearest atmosphere, and lighted up by the blaze of a vertical sun. It seems to me that all the attempts we have made to introduce Greek architecture have failed, just as attempts to grow an exotic plant out of doors must fail; and if I except the very clever designs of the Messrs. Thompson, of Glasgow, it is on the faith of drawings only, and from a conviction that they have worked in the spirit but not at all by the methods of the Greek architects. Greek art was succeeded by Roman, and all the architecture of Europe, and possibly much of that of the Mohammedan world, can be traced by direct lineal descent to that original; and inasmuch as the actual structural work, the architecture proper, bears a larger proportion to the whole mass of Roman art than it does to the art of the Greeks or Egyptians, there is more difficulty in your learning what you want to know about it from museums alone. On the other hand, the materials are not altogether wanting. The Crystal Palace once more supplies us with an example of the domestic architecture and the decorative painting of the Romans in its Pompeian House, and displays also many specimens of sculpture; while objects of all kinds, such as lamps, bronze implements, chairs, mosaic pavements, may be examined and sketched by you in the other museums. An exercise useful in itself, and more so in its results upon the artistic instincts, is the effort to become familiar with the differences between Greek and Roman art. Compare Greek statues with Roman, Greek coins with Roman, and so on through the various classes of objects which you can obtain access to, and you will, in addition to interesting yourselves, gain at the same time an insight into the nature of works of art that will benefit you for life. Greece and Rome, as you know, were succeeded by Byzantine and Ravenna as centres of artistic activity; and I must confess that I can point to little which will give you good ideas of the peculiarities of Byzantium architecture, though fragments of the sculpture and painting emanating from that school are to be found at South Kensington. The course of the round-arched architecture, which sprang from the Roman, and was modified in various ways in the earliest Christian centuries, eventually led it to our shores, and in the first actual buildings which we shall have to notice, we find London distinguished for at least one of the earliest and most perfect Romanesque buildings in Great Britain. Before, however, we come to existing buildings, I feel tempted, at the risk of interfering slightly with chronological accuracy, to conclude what I have to say about our museums. The style which, starting from Byzantium, ran east and south (just as the Romanesque ran west and north), and includes all Mohammedan architecture, cannot of course be studied from existing examples in any part of Northern Europe; but Mr. Owen Jones's skill and care have provided an admirable model of what may be taken as a good typical example of advanced Saracenic architecture in the graceful and elaborate Alhambra Courts at Sydenham. In Egypt and India a different development, simpler, grander, and more like Gothic, is found; but this specimen will enable the student to form some idea of the general characteristics of Mohammedan art. In all that relates to decoration, either coloured or simply surface-enrichment, the instinct of Eastern nations has been far in advance of ours, and no opportunity should be lost of inspecting Egyptian, Indian, Persian, Chinese, and Japanese work. Their sculpture, their carving, their inlays, their enamels, their woven fabrics, everything they produce, is to the last degree instructive, and the store of such things in London is now very great. The India Museum, the South Kensington Museum, and the shop windows of Regent-street and Bond-street, the specimens to be seen at Christie's or other auction rooms, and the various specimens to be found in private hands, afford endless opportunities of learning what perfect decoration means.

From the time when Mediæval art began to take the shape in which it first appeared, we shall find that we get actual buildings in London, but we get, in addition, an enormous accumulation of information (from sources difficult of access) upon the detail of architecture in our museums. The Sydenham collection, though rich in Mediæval examples is, I think, less instructive than our own Museum, owing to the mode in which various fragments have been thrown together in its Mediæval Court. The student must there be constantly on his guard, or he will do himself more harm than good; but the Mediæval tombs of which there are casts can be studied at Sydenham without this drawback, and are very useful examples. I hope, however, that there is no one in this room who needs to be told that at the Architectural Museum in Bowling-street, the sculpture, the carving, and the architectural features of every period, from the dawn of the Middle Ages to their close, may be found illustrated by casts and actual specimens from every part of Europe. Every arrangement to facilitate study will be found there, and it is hardly possible for any collection of fragmentary details to offer more advantage to the student than this does. The South Kensington collection supplements this gallery of casts by a series of objects of which the variety and beauty are almost embarrassingly great. Sculpture, carving, inlays, stained glass, enamels, mosaics, coloured decorations, ironwork, brasswork, goldsmiths' work, and all the numberless branches of the arts, are here represented by actual specimens of great extent and possessing great charms. To these one may add the Meyrick collection of armour, that at the Tower of London, the miscellaneous collection in the Guildhall Museum, the manuscripts in the British Museum, the collections at Sir John Soane's Museum, and the earlier paintings in the National Gallery; and we seem well supplied with the means of studying the details of an art which, more than any other, seems to require of the artist who would pursue it a complete and intimate familiarity with detail.

The Renaissance period is perhaps even better represented in our art museums than any other. The architectural detail, the sculpture, and the coloured decoration of the sixteenth century, are wonderfully well reproduced at Sydenham, and the objects in the Renaissance Court and the Italian Court are put together with far more consistency than the Mediæval ones. A certain amount of Renaissance work is to be found in the Architectural Museum at Westminster, but it is to South Kensington and the two collections of armour just alluded to that the student must turn who wishes to find the best fragments of architecture, decoration, pottery, wood-carving, metal-work, and artistic work generally in which this period was so rich.

In leaving the topic of our museums and their specimens and casts. I should like to anticipate an objection which may be raised by some of you to the extensive range over which I have directed your glance. Some may possibly suppose that, as architects, all you need know about is the forms of the moulded and otherwise architectural features of a building, and something of the shape which its enrichment will take; that is to say, that if you can do the plans, elevations, and sections, with the profiles of the mouldings, it is all that can possibly be expected of you. The carver will contribute the ornament, the metal-worker and stained glass manufacturer will design the finials and the windows, Minton's or Maw's people will do the paving, and why, therefore, need you understand these things, much more the enamels, mosaics, embroidery or goldsmith's work, which are to be found among the museum specimens that I have recommended to your study? Now to this I have only two things to say in reply, and they put the answer on the lowest ground. The first is that no work of art or skill is so painful a failure, generally speaking, as that where the artist goes to the extreme limit of what he has been trained to do. A man doing the best human powers are capable of with the means at his command, even if he fall short, often produces the very grandest of all possible results, such, for example, as Giotto's paintings, or the Early Romanesque sculptures; but a man who manifestly has only got to a certain point along a road on which by patient industry he or any other person of fair ability might have gone further is in an entirely different position, and he becomes very clumsy and unsatisfactory in his work as he approaches that limit, just like a badly taught young lady playing a pianoforte piece that is just as difficult as she can possibly get through. If, therefore, you limit your technical training to just the minimum of what you think you are likely to want you will never put forth all your strength without its becoming painfully obvious that you are with difficulty doing what many another man would easily do, and the quality of your work as it approaches the limit of what you know will be inferior. The second answer is that though it may often be legitimate to leave a large part of the detailed design of detached parts of the work to the executing artificer, the artist who directs it all—the architect, that is—should understand the whole, should know how to subordinate each part to the effect of the whole, should be able to see at once what is wrong when any feature seems out of keeping, and should actually, in most cases, give the general design, and in some the minutely-detailed design, of those parts. But beyond this I hold that an architect's education ought to include familiarity with all that is ancillary to his own art. There is no decoration, no fabric, no art work, which may not be helpful to him, and which may not teach him something if fairly and honestly studied. The study must, however, be genuine study, not idle gazing, for let me remark, in leaving the subject of museums, that there is all the difference in the world between studying and staring. To use a large collection well, especially one so devoid of systematic arrangement as that at Kensington, a man must have a degree of method and concentration in his own mind, and must resist with energy the very strong temptation to become desultory, and loose, and lounging in his visits, which an attractive and extensive museum always exerts. To know one thing well is better than to know twenty superficially, and if out of twenty objects of art, all somewhat connected together, you select one, examine it, draw it, make a written description of it, and so master the details of its construction and design, it is all but certain that the other nineteen will very readily yield up to you an amount of information which, but for your careful study of the twentieth, you could not possibly have obtained from them. Of course in visiting a museum it is natural to spend a little time in walking round to see what is to be found there, but I am sure that it is most desirable to get to work *early*. If an object strikes you as supplying information you require, or as very beautiful, or very remarkable, in short, if it tempts you to study it, my advice would be—Out with the memorandum book at once; sketch away and make your notes before going farther, and you will, I think, rarely indeed find reason to regret your doing so. And though I have gone historically through several great periods, I do not mean thereby to insist on its being advisable to form a rigid course and follow it. If circumstances (say the buildings in hand at the office where you are articled), or the accidents of your own locality, direct your attention to any one style or period, follow it up, and in doing so try to recollect that it has its place in the great chain of events, and that you will have to supply other links by degrees. A course of reading, or, better still, a course of lectures, will make it desirable for you to be able to verify the history of architecture by a series of visits to the specimens I have pointed out to you, and under such circumstances they may with great advantage be used as a comprehensive series; but where there is not a great deal of leisure—where a student has, to a great extent, to construct his own method of study, and when a large chronological system seems formidable, chilling, and dull, my advice would be to plunge in at the nearest point, and to work away, penetrated with the conviction that a thorough knowledge of a comparatively small number of good examples, even if chosen almost at random, is a very good beginning indeed, and far more valuable than a fair superficial acquaintance with many periods of art without any intimate familiarity with any one.

We will now turn our attention to the actual buildings available, and for that purpose shall have to turn back to about the date of the Norman Conquest, or of Roman London. No actual structures of this date exist that are much worth naming to you, though we have some few specimens of good pavings. Of Mediæval architecture we have sufficient specimens standing to render London a fair field of study, if not a rich one, and if those places be included which can be reached with a little expenditure of time and money by rail, there is a very large series of examples to which the student's attention may be turned. The best among the early specimens of Christian architecture in London, and one of the best in England, is the chapel in the Tower. This very early round-arched example is in the best possible preservation. It is invaluable as an archæological example, and it is quite as good as a specimen of simple church architecture. It would not absorb a great deal of time if a student were to measure and draw the whole of it, every detail included, but I think the time would be well spent, especially as he would get a familiarity with two features that are rare in England—an apsidal east end and a vaulted gallery or tribune, an essential part of the early basilicas, but not common, except in the shrunken form of a triforium, in this country. Of round-arched architecture there are some interesting but scanty remains at Westminster Abbey, and though they will speak more plainly to him who has seen a good deal of the same sort of work than to an untravelled student, they ought to be visited. As specimens of what remains within reach of London I may just name S. Alban's, Rochester, and Waltham Abbey. A splendid example of Transitional work exists in S. Bartholomew's Church, Smithfield, restored with great care by Professor Lewis; and an equally good example, of a little later date, exists in the Lady Chapel of S. Saviour's, Southwark, a building of the utmost grace and beauty of design and detail. Almost every phase of Pointed architecture, from Transitional to Tudor, may be found and studied with the utmost advantage at Westminster Abbey. It is not too much, I think, to say that in the Abbey, with its cloisters and Chapter-house, we have a sufficient model for the stay-at-home student to learn all that needs be learnt in order to be familiar with the main elements of Gothic architecture. It is true that in some cases there is not a complete series of examples of every sort of thing belonging to every period; but there is almost, if not quite, every feature of some period, and every period in some feature. The arcading, and caps, bases, and mouldings, including large and small, would, I think, enable a quite perfect series to be made out of capitals, bases, and archmoulds. Nearly, if not quite, the same may be said of the vaulting, while of Late vaulting, one of the two finest examples known is Henry VII's. Chapel. Of tracery, avoiding what has been badly restored in former days, there is not so perfect a series, but still there are many varieties. The tombs, taken one after another, give a large series of tabernacle-work, sculptures, enamel, ironwork, bronze-casting and inlays. There are mural paintings in the Chapter-house and the Chapel of S. Blaise, and the ancient retabulum. There is magnificent sculpture in stone of every period, especially of the best, and there is a splendid example of Late sculpture in wood and tabernacle work in the stalls of Henry VII.'s Chapel; and last, but not least, there is the best tile paving now left entire in England in the Chapter House, and the best pavement in *opus Alexandrinum* on this side the Alps in front of the altar. In short (except, perhaps, stained glass), there is hardly a feature in a cathedral church which an architect cannot here find done, and well done, in some period of the Middle Ages. There is not a period, from the reign of the Confessor to the Reformation, which he cannot find more or less represented in the Abbey. If we pass from the study of detail to that larger study, at once more difficult and less cultivated in the present day—the study of general design—these four examples will be of the greatest possible value, as far as internal design goes. The Chapel in the Tower and S. Bartholomew's are, if I may be allowed the expression, insides that have no outsides; and S. Saviour's and the Abbey have had their outsides so marred by bad weather and bad architecture that it is not ways possible to get much good out of them; but it is not so with the interiors, and if the student will take some sketches and measurements in each example, in order to find out not only the nature of individual features but that of the buildings as wholes, he will be rewarded for his pains. You are no more a finished architect when you have only mastered detail than you are proficient in language when you know the vocabulary and some of the idioms. The genius of language, and that of architecture, uses, indeed, the correct materials, but in building them up into a whole it regards the beauty and fitness of the whole more than the propriety of the parts. There are a few more Gothic churches to be named, such as the chapel in Ely-place, the Dutch Church in Austin Friars, the Crypt of S. Stephen's Chapel in the Palace of Westminster, the Temple Church, the Chapel in the Savoy, and within easy reach, S. George's Chapel, Windsor, but they all suffer from the disadvantage of having been restored to an extent which more or less impairs their value as examples. Parts of the Temple Church, especially the western portion and its porch (comparatively recently laid bare) are of great value, however, and S. Stephen's Crypt is a good example of vaulting, and a good specimen also of lavishly-rich restoration.

Mediæval domestic work, like the Mediæval churches, must have disappeared wholesale in London at the time of the Fire, and it has been disappearing ever since. There still linger fragments and features which are precious to the antiquary, but I cannot recommend all of them as much worth the attention of the young architect in search of useful studies. The Tower, under good guidance, yields a certain amount of information, but almost every stone of it, except the chapel (already referred to), has been meddled with in some way, and, in fact, it is not till we approach Tudor times that available London examples are forthcoming. In Westminster Hall we have, however, one of the noblest specimens of secular architecture extant, in good preservation and in constant use, and it is as possible to get good from studying one secular example well as it is from one abbey. We can supplement Westminster Hall by Crosby Hall, the ruins of Eltham Palace, and the Gothic portions of Hampton Court, especially the hall, which is very fine. Lambeth Palace also contains sundry valuable fragments of various dates. If we now advance to that thoroughly English decadence or transition which gave so much that is picturesque—mixed, it is true, with much that is clumsy and uncouth—and to which we give the name of Elizabethan, we shall find a few examples scattered here and there, but not all of them easily available for the student. The Middle Temple Hall, parts of Holland House, the condemned Charterhouse buildings, are all that occur to me. But if London be poor in Elizabethan, there are excellent domestic secular architectural studies in the style, or earlier, within an easy run of London. Hatfield House is the best Elizabethan example on the north side, and, I think, the only one very easily reachable; but southwards a whole group are to be found all readily accessible by railway, and almost all open to the public, which, I believe, Hatfield is not. Near Sevenoaks we have Knowle, a fine and enormously large mansion, placed, like Hatfield, in a magnificent park, full of ancient furniture and plate, and, though not an imposing building, an instructive one. Not very far from this is Ightham Moat, and a few miles off are the moated house of Hever, Penshurst Place, and that most picturesque of all old-world villages, Chiddingstone. Indeed, scattered throughout the county of Kent there are many manors, farmhouses, and dwellings that it is most instructive to sketch and even to measure, if one desires to master the detail of late Mediæval and Transitional domestic work and the principles upon which those who designed that work in an artistic manner (for it is by no means uniformly artistic) must have proceeded.

(*To be continued.*)

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THE VALUE OF RUBBINGS IN THE PREPARATION OF MONUMENTAL DRAWINGS.

At a recent meeting of the Society of Antiquaries of Scotland, Captain T. P. White, R.E., read a paper "On the Value of Rubbings in the Preparation of Monumental Drawings." Passing on, after some introductory remarks, to consider the general question as to the value of rubbings, Captain White, referring to specimens of rubbed tracings exhibited on the walls, asked—Are not these tracings pictures in themselves, and must not drawings rigidly copied from them just as they stand retain to a large extent their veri-similitude and pictorial character? It is this value, strengthened by an after-touching of the drawing on the ground, which I wish to compare with the value of unassisted freehand sketching. Let it first clearly be understood to what class of objects I refer in instituting this comparison. Any flat surface of a hard material—stone for example—with incised spaces carved on it, will give a paper-impression by means of rubbing with grass, kail, or other vegetable matter (better, I think, than with heel-ball or black composition). But it is essential that the carved work should be upon a flat ground, with simple hollows cut into it, in planes vertical to the upper surface. There must be no attempt to represent rounded forms by convexities or concavities. Everything pictorial must be restricted to outlines depending for their ornamental effect upon harmonious grouping, assisted by vertical relief, so as to form one flush surface. Now, these are precisely the conditions which obtain on flat tombstones, bare sculptured rocks, &c., but especially in the Mediæval slabs of this class, and in monumental brasses. As an example of what I mean, look at the chalices on the drawings now shown. A real goblet, seen sideways, is of course round, yet on the stone it is represented by a flat surface—not a hemisphere—a profile outline, in fact, projected into a horizontal plane. An exception to this is met with in the effigies brought up into higher relief, and for that reason I do not consider such monuments fit subjects for rubbing. They fall properly within the domain of hand-sketching. Again, observe in all the slabs with ornamental foliage how every leaf is essentially a flat surface, with no other ornament but incised outlines. Knotwork, figures of animals, figures of men, sword handles, galleys, and so on—all are expressed by the chisel cutting perpendicularly down into the surface of the stone, and leaving a sharp edge. The only roundness, then, we need look for in these stones is in the edges of the incisures, which, after a lapse of time, will naturally get worn down, more or less according to the exposure. Another exception to this rule is in the beadings, and to some extent in the larger figures of ecclesiastics cut in low relief. Sometimes—as was the case with a superb ornamental slab which my assistant, I believe, was the first to discover and trace for me—a stone is hidden away from exposure to weather and ill-usage, and thus the lines come out as fresh and sharp almost as if cut yesterday. The wonderful symmetry of the thread-like incisures, the faultlessness of every spiral sweep, speak for themselves in the rubbing. Conceive an artist refusing a perfect reduction from this slab to shade in, and setting to work instead to draw it freehand, in expectation of arriving at the same accuracy. The next question is this—Given a really good rubbing, carefully taken, what is likely to be its maximum faultiness, and from what causes? My answer is, that a good rubbing will be an almost perfect reprint of the stone, not merely giving all the outlines of the figuring in exact drawing, but reproducing every chip and crack in the upper surface of that figuring. It will be, in fact, like a life-size photograph—only often supplying much more than a photograph could do. Every little turn and twist, every minute deviation from uniformity in the pattern, every break in the edges, comes out clear and life-like; but always, of course, like the photographic negative, light in the hollows or shadowed portions, and dark on the upper surfaces. On the other hand, the worn roundness of edges, and any weather marks within the hollows, will escape the rubbing. But there is another property of the rubbing upon which I wish to lay particular stress, in contrast with what freehand drawing can attain to—this is, that in much obliterated slabs the rubbing will search out and record far more than the eye can possibly see on the slab *in situ*, at any stage of the sunlight—producing, so to speak, a resuscitation of what once was visible, but is so no longer. It was thus that the Saddell drawings showed more freshness of detail than is apparent on the ground. Often have I been struck with this peculiarity—this revivifying power in the rubbing. A notable instance is the ancient cross at Sanda Island. It will be seen what the rubbing shows, which has been reproduced in my drawing. I stayed two or three hours in the afternoon on the island, and saw the stone most of the time. Yet not the faintest indication of the various interlaced patterns, not even the divisions into panelling, except to a very slight extent, could be detected by the eye. I have here another fragment, on which one can make out a pattern of linked circles and beautiful underlying plaitwork that must have been very elaborate. Now, the surface of this stone is so unmarked to the eye that, after minutely examining it, and finding only a tiny hole here and there, I was obliged to rub it before I could decide if it was Mediæval or not. Could there be a more striking proof of this power of the rubbing? Or, again, look at this elegant slab at Saddell, one of those I formerly described as having on it a single sword, with surrounding tracery nearly defaced. The rubbing tells a different story, for it shows with a sufficient clearness the whole intention, character, and detail of the carving, almost as if we had seen it when freshly cut. In the drawing it is clear I must represent *more* than I saw on the stone, or else I shall be untrue to the life and spirit which, though hidden to the eye, still animate the sculpture. Rapidity of execution is another great point in favour of rubbings. Those three specimens I took myself in half an hour. How long would an artist be in doing justice to freehand drawings of them? Of course, my duties, which take me constantly through the localities where the rubbings were made, give great facilities for revisiting the ground and touching in the reduced copies. The next question is, how to utilise the rubbing for purposes of general illustration. Photography would only give negative transcripts, faithful enough of course, but according to my assistant, who tried it in one or two cases, not very satisfactory as pictures. Photographic prints would certainly be of considerable value if we could get nothing better, but then they would involve an expensive process. Still, what we should prefer to have is a positive pictorial representation as nearly a *facsimile* of the stone as possible. And this brings me to the concluding point in my observations. For, if I have established the high value of a good rubbing, and also of a photograph taken from it, that which shall substitute for the negative representation a positive one, with light and shade in their proper relative places, must surely be an advance upon either. So that, if a draughtsman sits down with a reduced pencilled copy of one of these rubbings, and simply effects the substitution I speak of, he must come a step nearer the end aimed at—namely, a perfect representation. Indeed, where the details of the rubbing are all obviously complete and intelligible, if he stopped there, and never revisited the ground at all, there would still undeniably be a drawing of a very high value to the historian, the archæologist, and the artist. Yet this is the precise position of the original Saddell drawings, the defects in them being entirely due to imperfections in the rubbings, caused principally by execrable weather at the time of taking them. The fact that those rubbings and the resulting drawings were slightly defective is used to build up the inference that all drawings "made up" from rubbings of "objects with a raised or irregular surface" must be entirely valueless. But I admit at once the desirability of touching up and perfecting the reduction on the spot. And when this is done, what unprejudiced person can doubt that the result must be a nearer approximation to the truth than the freehand work of the same draughtsman? Put into the hands of an artist the skeleton imprint or *facsimile* of that stone's sculptured surface for him to work upon, and you give him half the battle at once, and much more than half. Freehand drawing has its proper sphere, without undertaking too much. Glance at some of the more elaborate specimens of slab carving, and imagine what it would be to draw in by hand the multiplicity and extreme intricacy of detail here pictured! What would be the chances of getting into accurate position every touch and curve of a leaf or twist of a stem, or the endless ramifications of that running knot, or of that other interlaced wheel? Might not a crack be left out here, a chip there, and so on? Could every part of the carving be expected to appear in the unerringly true proportion given by the rubbing? Impossible, I say. You might set fifty draughtsmen opposite that rock sculpture to sketch it freehand, and not one of them would turn out the same drawing as any other. This, then, is the position I hope I have succeeded in establishing:—1st, that the monumental sculptured slab of the class generally found in the West Highlands is peculiarly suited for copying by the rubbing process; 2nd, that in point of outline accuracy such copies, and the drawings resulting therefrom, must more or less, according to the intricacy of the sculpture, surpass anything the freehand sketcher can attain to; 3rd, that in slabs much worn down, more detail oftentimes is caught and printed off in this way than is visible to the naked eye. And 4thly and lastly, that a mechanically-reduced pencil copy of such a rubbing, placed in the hands of a draughtsman, to touch in afterwards on the ground should, without sacrificing pictorial effect, be a more *scientifically* valuable illustration of the slab than a mere freehand sketch by the same draughtsman could be. But let me not be misunderstood. By "scientifically valuable" I mean valuable for the purposes of the historian and archæologist, that being undoubtedly the *primary* requirement. The *artistic* excellence of the drawings is for such purposes another but clearly a *secondary* matter. Were the point of issue one of pure art, the mechanism must at once be thrown aside. If we wanted simply a charmingly-executed picture and nothing else, then, of course, considerations of what constitute artistic merit proper would come uppermost, which would alter the case entirely. Personal skill, the individual mind of the artist, and such like qualities, would immediately affect the question. But it is just these personalities, or idiosyncracies, that we are not to recognise here—that, indeed, it is desirable to eliminate, except so far as they may serve in the capacity of handmaids to the strict object in view, that object being, I take it, to bring the nearest thing to the slab itself, with its collection of facts, before us on the paper. Yet by all means, having secured this first desideratum, superadd all the personal artistic embellishments in your power. And I see no reason, even from a pictorial point of view, why drawings fortified by rubbings may not reach, if not the highest, at all events a very high degree of excellence.

Building Intelligence.

CHURCHES AND CHAPELS.

BRISTOL.—The church of S. Nicholas, Bristol, was reopened for divine survice on Sunday last. The old pews have been entirely replaced by seats of polished pine, with bench ends of oak. The chancel fittings have been taken away, and new fittings of oak erected, together with a new pulpit and priest's desk. The alterations have been carried out by Mr. W. Brock, of Temple Mead, under the direction of the architects, Messrs. Ponton & Gough. The total cost is about £600.

LEAMINGTON.—A vestry meeting was held in the Town-hall Leamington, on Monday, to take into consideration a report, presented by Messrs. Slater & Carpenter, respecting the condition of the parish church. On three several occasions portions of the stonework have fallen from the central arch into the body of the church, and persons have narrowly escaped serious injury. The alarm occasioned by these accidents led to the church being closed a few weeks ago, since which time an investigation has been going on as to the true condition of the building. A report was read to the Vestry, furnished by Messrs. Slater & Carpenter. Respecting the Four Evangelist columns, from which the main arch springs, Messrs. Slater & Carpenter reported that they were not constructed of the same material, nor were the several caps of the same height. The north-west and south-west columns were faced with Southam limestone to a height of 23ft. 6in., the upper portions of these, and the whole of the other two columns, being faced with Caen stone. They also mentioned that the other two columns are not of the same section, and that the arches overhead varied to the extent of three inches. Three of the Evangelist columns have "settled," in consequence of which the adjacent walls and arches were crippled and fractured. The north-west column was out of the perpendicular, and leaned 1½in. westward. The south-west column also leaned westward 1in.; the south-east column 1in. southwards, and the north-east column 1in. northwards. The north and south walls of the nave were also out of the perpendicular, the former 1¾in., and the latter 3½in., both walls leaning outwards. Messrs. Slater & Carpenter further mentioned that the small size and improper construction of the columns rendered them unfit to bear much more weight than had already been placed upon them. They also objected to the design, construction, and materials of the four great arches. The stones (Warwickshire sandstone) were not sufficiently hard for such a purpose; they were improperly jointed as well as imperfectly executed, and the arches having been erected without sufficient "centreing" they had settled irregularly, which had led to the portions of stone being driven off. The brick arches were not of sufficient thickness, and did not answer the purpose for which they were intended. In the end the Vicar announced his intention to open the nave for worship, and a resolution was adopted in favour of having the church inspected by a civil engineer.

MOLINE, UNITED STATES.—A new Congregational church at Moline, Iowa, was recently dedicated. The building is of brick, with heavy pilasters and dental work, and rests on a foundation of Joliet marble, cut in rustic. Its entire length is 120ft., and the average width 55ft The styles are Norman and Gothic. The cost of the edifice is not far from 31,000 dols. The design was by W. L. Carroll, of Davenport.

BUILDINGS.

BANFF.—The new Court-house for Banff was opened on Wednesday week. The building is in the Corinthian style of architecture, and is built of freestone. The court-room is 38ft. 3in. long, 28ft. 5in. wide, and 26ft. 6in. high. The rooms are heated by hot-water pipes. The cost of the building is £7,000.

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TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

RECEIVED.—R. D. & Co.—J. H.—L. G. D.—J. H. & Co. —R. & E. P.—T. B.—J. H.—W. A. B.—J. R. St. A.—G. H. G.—J. P. S.—C. B. A.

AN INDIGNANT PROVINCIAL.—We really don't know what you are driving at.

JOS. RILEY.—The advertisement was inserted in mistake.

BETA.—Your nice little letter on sandals is hardly appropriate for the BUILDING NEWS.

J. D. S.—Most of the numbers may be had.

AY. Z.—Next week.

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Correspondence.

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KITCHEN BOILERS BURSTING.

(*To the Editor of the* BUILDING NEWS.)

SIR,—At the inquest on the death caused by the bursting of the boiler of Mr. Rendell, C.E., we think he said that no safety valves yet invented are to be trusted. The true principle to go upon is to prevent the pipes from freezing. We have (acting under the guidance of an eminent authority in such matters, whose name we subjoin for your own information) succeeded in accomplishing this object, and, as we have patented the invention, we shall have much pleasure in submitting it to your consideration.

It consists of an iron tube screwed on to the up or down pipe near the range. The water enters at the bottom and comes out at the top of this tube. This tube is a cylinder, and open top and bottom, with a jet of gas burning through it, the whole thing being not unlike an argand lamp-glass, only the glass being hollow iron. The heat given to the water causes a very strong circulation through the pipes, and makes it impossible for them to freeze.

We adapt the same principle to the common water service pipes throughout the house, by adopting means to keep them empty at night, and keeping the water warm by means of our apparatus.

The whole is very simple and costs only a few shillings, and we think that after the trade and the public are warned through your columns that a simple remedy can be applied to obviate the constant danger of boilers bursting (besides expense of pipes bursting), the verdict of the jury will be very severe against any one who does not avail himself of it.—We are, &c.,

WATERSON & Co.

LUMP CONTRACTS AND THEIR SUBSTITUTE.

SIR,—Your article on "Lump Contracts and their Substitute" is to my mind a very comprehensive one; and goes directly to the root of all squabbles and vexatious lawsuits in the building trade. The scheme is evidently the result of long and thoughtful experience; and is to my mind preferable to that adopted by the London builders and the Fellows of the Institute—viz., the appointment of two surveyors, one nominated by the architect and one by the builders—and non-responsibility of client for any error. It is an axiom with me that as the client gets the benefit of the work, he, and he only, ought to pay for it; the builder certainly should be paid for his actual goods delivered. It seems to me obviously unjust to make either the architect or the surveyor responsible. "Professional odium," as you term it, would be a sufficient corrective of negligence or carelessness, and these are the only crimes for which any of the parties connected with the erection of a building should be asked to pay a penalty. Whoever thinks of asking his lawyer to pay for the result of wrong legal advice, or for the neglect or thoughtlessness of one of his lawyer's clerks? I have known several instances of considerable loss proceed from these causes, but "professional odium" is a sufficient deterrent to prevent a repetition. The correction of errors has always been a principle acknowledged by the Court of Chancery. Why not? It is absolutely necessary to good government. Every building contract—where there is a client, an architect, and a builder who want only what is fair—is a very simple matter, and seldom leads to a dispute. Builders, as a class, are no less honest than other men, and will, as a rule, do their duty when fairly treated; but there is a tendency to make them responsible, not only for their own errors and want of judgment, &c., but also for the errors, &c., of architects and their clerks—which has grown considerably of late years. It is no matter for wonder if some builder not overburdened with moral courage should attempt in self-defence to evade the strict fulfilment of his contract. The natural result of over-reaching on the part of the architect is either resolute resistance or evasion on the part of the builder. The firm with which I am connected has executed several works on the principle laid down by you. We have one on hand now for an influential railway company. The scheme you propose is, I believe, universal with their engineers. We have recently built a large hotel in the West of England on the same principle. In this latter case the quantities formed part of the contract, and payments were made monthly. Our application for every certificate was tantamount to notice for an appointment by the architect of a meeting of himself, the builder, and the surveyor at the building in the clerk of works' office. The architect invariably brought with him his own office copy of specifications and quantities, and, though our monthly certificates frequently exceeded £2,000, we could always agree upon the amount in about half an hour—no measurement of the building being necessary—simply abstracting such items from the priced quantities as were then executed, and approximately those partially executed. All extra works were measured up each month, when all day-bills were regularly rendered, corrected and certified, and for these works a separate payment was made, distinct in every respect from the contract sum. At these monthly meetings of architect, builder, and surveyor, such matters as delay occasioned by extra works, waiting for iron girders from Belgium, or other circumstances beyond our control, were adjusted on the spot, the terms of adjustment written on the extra bill, and signed by the architect. Hence all parties invariably met on the very best terms, and the adoption of a mutual "give and take" principle in trifling matters surmounted every difficulty. What the architect asked for was readily granted by the builders, and at the completion (some two months within the stipulated time) all parties were well satisfied, the directors especially, for they very handsomely paid us a bonus of £500 over and above the amount of the contract and claim for extra works. The architect in this case was a thoroughly practical man, holding high social status, with a considerable income independent of his profession.

Another of our contracts, for a very large town-hall, entered into in 1866, is executed on the same principle, but the working of it has been as different as it possibly could be. In this case, though there are large extras, every difficulty has been settled hitherto on the most amicable terms. In both these contracts, the former £25,000, and the latter over £50,000, the quantities were taken by independent surveyors, appointed by the architects, and no error of magnitude has been discovered in either case. Every builder should be paid to the full for all the work he does, and his contract should contain no legal clauses to prevent his obtaining this. The surest way to it is to incorporate the quantities with the specification and contract, at the same time protecting the proprietor against merely factious claims or fancied deficiencies. Errors in quantities are far more likely to occur in favour of the client than of the builder, because a surveyor cannot measure what is not shown on the drawings, and he may omit to measure something, or forget to put down as a multiplier the number of times any particular dimension should be repeated.

All extras or additions should be paid for at prices of, say, ten per cent. in excess of those in contract, because of the increased labour and attention required by the builder, as well as the confusion or disarrangement imported into the builder's arrangements, besides the expenses which are incurred by attending upon the surveyor—and in some cases absolute payment of half measurement, none of which are contemplated in pricing the estimates, each price being fixed at its minimum.

All deductions or omissions of work should be valued at, say, five per cent. less prices than those in contract for the same reasons. On one occasion our firm has actually had a contract in which these latter clauses were inserted, and in many others we have squared up the principle has been admitted by the architects.—I am, &c.,

A LARGE CONTRACTOR.

MEMORIAL TO THE LATE MARQUIS OF WESTMINSTER.

SIR,—One more has been added to the long list of be-muddled architectural competitions, so many of which have received well-merited publicity in your columns.

The Committee of the above Memorial issued no less than three different advertisements; first for "plans, specifications, and tenders," &c., for a cottage hospital to be erected at Shaftesbury, with the reservation usual in builders' competitions—"The Committee do not pledge themselves to accept the lowest tender." Next for "plans, specifications, and tenders," &c., but with the above reservation omitted, and "plans to be sent in under a motto, accompanied by a sealed envelope containing the name of the sender" substituted. Lastly, the following:—

"The Committee of the Westminster Memorial invite designs for a cottage hospital, to be erected at Shaftesbury, Dorset, in the Old English style of domestic cottage architecture. External walls greenstone, with box ground stone dressings, with brick internal walls, the roof covered with plain tiles. The hospital to contain six beds (in two double and two single rooms), a private room for the nurse, a day-room with south aspect for convalescents, kitchen, back kitchen, bath room, and offices. The architect to provide foundation plan, ground plan, one pair or bedroom plan, plan of roofs, four elevations, two sections, all drawn to a scale of 8ft. to an inch. A premium of 20 guineas will be paid for the approved design and drawings, which are to become the property of the Committee, who shall be at liberty to carry out the same (with or without modification) without further assistance from the architect whose plans are accepted, the premium to be considered as payment in full for the above-named plans, &c. The cost not to exceed £800. The drawings to be sent in on or before January 1st, 1871. For further particulars apply to the Hon. Secretaries.

"Shaftesbury, November 28th, 1870."

It will be seen the last advertisement is very explicit, the materials to be used, and even the "style" being specified. What the "Old English style of domestic cottage architecture" may be is doubtful; but one may perhaps logically deduce from a portion of the committee's syllogism that all cottage architecture in England is not domestic. This involves a doubt, and it is to be hoped that the committee will publish their selected design, so that the architects of England may be duly enlightened.

Through the course of a long and somewhat varied practice I have been lucky enough to steer almost entirely clear of competitions. The last (previous to this present one) that I entered upon was when I was "young and curly"—I am almost afraid to state how many years ago. The genial sportsmen of Dorsetshire wished to commemorate a county worthy, still beloved and living amongst them, whose chief claim to distinction was that he had kept hounds for fifty years at his own expense. A committee was formed and funds collected amounting to £1800. The committee would have a monument and forthwith the usual tremendous bait was thrown out to greedy and impecunious architects. Designs were required for a column 100ft. high, t be built on the highest point of one of the bleakest of the Dorsetshire downs, totally inaccessible by any road, the column to have a staircase within, and sculpture without, and to be with or without an equestrian statue on the top. I resolved to compete; but my too tender conscience revolted against the equestrian statue. Why the tramway to get it to the top of the hill, and the scaffolding and other mechanical appliances to hoist it 100ft high, would cost all the money the committee had to dispose of, and whence then was to come th vast column, the sculpture, and the winding stair case? I threw into my "design" a fox, a dozen hounds, half a dozen horses, and half a dozen scarlet-coated men, but as they were only ac cessories of the landscape and not of the column I satisfied my too tender con-science, and (as fondly dreamed) flattered the proclivities of th sporting committee as well.

Sir, I was not successful! An older hand than myself "embraced" in his design the fox and th hounds, supposed to be in the flesh, and the eques rian statue, supposed to be in stone. A kind of Hyde Park Corner "Duke" mounted on the top of the Nelson column—and, what was to the elder and, no doubt, of more practical consequence, the enraptured committee rewarded his audacity with the premium.

The column was not erected; and I learnt afterwards, to my disgust, that the lucky (?) "prizeman" knew before he sent in his design that it never would be.

Experientia docet! Thus early I learnt that in architectural competitions, conditions are but empty words, and that while to be successful the architect must indeed be bold, he need feel no anxiety as to any assignable limits to the receptive capacities of ordinary committees!

But here, after the lapse of years, in the advertisement of the Westminster Memorial Committee, was matter once more to tempt one into the fussy arena of speculative competition, to gamble (not gambol) with straining frames, clean washes, ethereal greys, and vivid reds;—tremblingly I whispered with Young (and mine indeed were "Night Thoughts")

Some angel guide my pencil while I draw!

Seriously I thought it impossible at the present day that any architect would be honoured with a premium who, designing a hospital, whether cottage, memorial, or however qualified, should forget that above all things, his hospital should *be* a hospital; that his first, second, and third should still be Hygiène, Hygiène, Hygiène.

But, alas! for fitness; alas! for the "Domestic Cottage" style!

Out of forty-two designs sent in, among them being some by men of experience and ability, the committee selected two, both of which more or less ignored the conditions of the several advertisements.

One of the two selected designs had upon it, *in ull*, the name and address of the "sender," and nother bore the motto "Perseverando."

The first was a Batty-Langley sort of design for a small villa, devoid of any special hospital arrangements, and in an art point of view simply beneath criticism.

The design of "Perseverando" has much more merit in it. It is fairly drawn and not extravagantly coloured, and is evidently the conscientious, and therefore so far praiseworthy work of a young man.

The elevations have the accustomed *rusticated* quoins of Bath-stone, stacks of octangular chimney shafts, moulded, capped, and based all in Bath-stone, regardless of expense; a plain square greenstone front wall, pierced by a centre doorway and by two tiers of small square-headed mullioned windows, the whole suggesting a doubt whether indeed the "Domestic Cottage" style is any new thing, or only that Early Gothic flower, which we cherished with such fond and possibly misguided affection during our pupildom.

As to "Perseverando's" plan, it is sufficient to note the salient features. General arrangement, cruciform, with front arm covered by a roof about 18ft. span, and of high pitch; the back nearly twice the width, covered by a roof of wide span and flatter pitch; wards for two beds, each 15ft. 6in. long, by only 10ft. wide and 11ft. high, having a window at one end only; corridors, only 3ft. 6in. wide; a central staircase, serving as a duct from ground to upper story, but with no roof ventilation: kitchen and scullery placed side by side under the wide flat roof, with no corridor of communication between the front portion of the building and the offices at the back of the kitchen; pantry opening direct into the kitchen; no hospital wash-house, so that the scullery, the kitchen, and the pantry are liable to be pervaded by the same ill odours; earth-closets, but with no provision for storing or drying earth, or for feeding the hoppers; the one nurse's day and bedroom on the first floor, leaving the convalescent room and the ward on ground floor free from supervision; no scheme of drainage whatever.

Such are a few of the features in the design of "Perseverando," but which, nevertheless, the committee have ultimately selected as the best.

They, however, show their sense of the fitness of the plan by calling upon the author to entirely remodel it, and also by withholding the promised premium.

Is this fair to the rest of the competitors?

Entre nous, I feel some commiseration for the committee plagued by forty-two designs!

The great French novelist says:—"What shall we do; we have only *one* Monthyon prize!?" "Well, give it to some one who has done nothing to deserve it—that is the way the Academy mostly escapes from the dilemma!"—I am, &c.,

"L'HOMME QUI RIT."

RUDIMENTARY ARCHITECTURE.

SIR,—A little book useful to students who wish to get a general idea of the different styles of architecture, has lately been published, entitled "A Rudimentary Manual of Architecture," by Thomas Mitchell. The preface states that it has had the benefit of the revision of three professional gentlemen eminently qualified for that purpose, yet not one of the three seems to have thought that the description of open timber roofs, on page 177, required any revision, although *king* and *queen-posts* are made to stand on tie-beams, and support the weight above instead of being suspended from the apex and supporting the struts, and the weight on the tie-beam below. Moreover, the straining beam between the heads of the queen-posts s spoken of as "a second tie beam." Such gross errors as these ought not to be allowed to pass unnoticed in a book ntended for architectural students.

R. E.

Intercommunication.

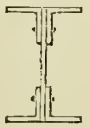
QUESTIONS.

[2112] POWDER MAGAZINE.—I have been asked to furnish sketches for a powder magazine to be erected at a shooting range. It is to be 10ft. square, and 8ft. to wall head. Could any of our Volunteer architects give me a few hints?—S. B. W.

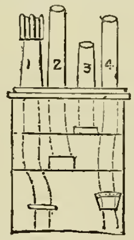
[2113] WELL SINKING.—I have a well 45ft. deep. The water comes from the bottom, as the sides were built in cement and pugged behind to keep out the surface water. I wish now to fill up the well with washed stones, so that I may not have so much standing water. The inside diameter of the well is 34in. Will some one kindly tell me how I may calculate the contents, so that I may only have my day's consumption at a time in the well?—AMATEUR.

[2114] FLOW OF WATER.—I should feel obliged if any of your correspondents would name the best formula for calculating the discharge of water from pipes. I want to know the quantity of water that a main of uniform size (say 6in. diameter, with a head of 180ft., and a mile and half long) will deliver in a given time. Also the quantity that a main of the same length and head, but composed of 9in., 8in., and 6in., pipes, would deliver in the same time. Also the quantity dischargable through, say, 20 ½in. taps, each running at the same time at the longest point of the said main. Would prefer the reply in plain figures, and would be glad if they would name some of the best works on the subject.—HYDRAULIC.

[2115] WROUGHT IRON GIRDERS.—I shall feel obliged if some kind subscriber to your journal will assist me in and show by figures how to calculate the depth, width of top and bottom webs, and thickness of iron plate to support a floor 1½cwt. per square foot superficial. The room measures 29ft. 10in. by 20ft. An early reply will oblige.—ANVIL STOCK.



[2116] SMOKY CHIMNEYS.—I would feel obliged to any of your readers if they could advise me on the best means of curing four chimneys of smoking. I have tried several zinc pots without success. The chimneys are all together in the back stack of a six-roomed house, with kitchen built at the back, and carried by an arch into stack. I think the chimneys are nearly as straight in proportion as I have drawn them.—W. H. B.



No. 1, has a fluted head; No. 2, tall boy; No. 3, 2ft. red pot; No. 4, 4ft. red pot to kitchen.

[2117.]—TRADE PRICE LIST.—Can any of your correspondents inform me where I could get a Scotch trades' price list?—A JOURNEYMAN JOINER.

[2118.]—VENTILATING WINDOWS.—Having lately put in a new plate glass front to a shop, I should be glad if any of you correspondents could inform me of any means of keeping them free from condensed air, as during the greater part of the day things in the shop cannot be seen from the outside.—A SUBSCRIBER.

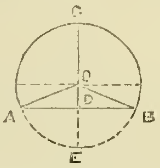
REPLIES.

[2079] COPYING ORNAMENTAL WORK ON TOMBSTONES.—As none of your correspondents have answered "I. M. A.," I will describe a simple method by which I have obtained copies of designs, either sunk or in relief. Obtain a piece of white paper, the thinner the better, and lay it over the design to be copied; then rub the paper, especially the edges of the design, with a piece of what shoemakers term heelball (black), which you could obtain at any shoemaker's. If you do this carefully you will obtain a well defined copy of the design in a few minutes.—FRANK CHESSELL.

[2087] ASPHALTE IN CHEAPSIDE.—Whether the heat is applied before or after laying the material does not affect the reply to the query. In defence of my statement I had the explanation of an agent of the company, and also their written description of the process in their lately issued pamphlet.—P. E. M.

[2090] TIN-LINED PIPES.—It is a great pity that the paragraph alluded to has obtained currency in this country. I can only suppose it originated in malice, it being opposed to the plainest facts. Water does not corrode tin, nor is there any probability of galvanic action being set up. Such action, if possible, would be but slight between these metals and would in no wise affect the value of an ingenious invention and most important sanitary aid.—P. E. M.

[2097] TUNNEL EXCAVATIONS.—The following is in reply to "Surveyor's" query in your issue for January 20. In the accompanying figure



Let C D = v = the versed sine of segment.
,, A C = c = the chord
,, A O = r = the radius B O = C O

Then to find the radius (r) of circle, of which the segment is a part, we have the following expression:—

$$r = \frac{c^2 + 40^2}{8\,v} = \frac{c^2}{8\,v} + \frac{v}{2}$$

Also to find the number of degrees contained in the arc A C B we have sin L A O E = $\frac{c}{2\,r}$. Then 2 L A O E = L A O B, hence L A C B = 360° — L A O B, which call ϕ. Having found r and ϕ, we then have the following general formula for the area (A) of the segment:—

$$A = \frac{r^2}{2}(\phi^{\circ} \times \cdot 017453 \pm \sin\phi) \qquad 1.$$

The plus or minus sign in this form to be used according as the segment is greater or less than a semicircle. That is, if the segment be greater than a semicircle the plus sign must be used, and if less the minus sign. To find the area of a segment (when greater than a semicircle) having a table of areas of segments calculated to diameter = 1. Denoting the versed sine by v, and the radius by r, as before, put $p = 1 - \frac{v}{2\,r}$

Thus we find the value of p in the column headed versed sines, opposite to which value will be found the corresponding tabular area, which we will denote by t, then the area of the segment will be found as follows:—

$$A = 4r^2\left(\frac{\pi}{4} - t\right) = d^2(\cdot 78539 - t) \quad 2.$$

where d denotes the diameter of circle. The following rule for finding the area of a segment gives a very close approximation to the true result:—

$$A = v\left(\frac{2\,c}{3} + \frac{v^2}{2\,c}\right) \qquad 3.$$

When the segment of which the area is required is greater than a half circle, the area of the remaining segment must be found, and subtracted from the area of the whole circle, which will give the area required. Applying the data given by "Surveyor" to the first method, viz., v = 15′ 3″ = 15·25ft., and c = 21ft., to find the radius we have,—

$$v = \frac{21^2 + 4 \times (15 \cdot 25)^2}{8 \times 15 \cdot 25}$$

$$\frac{441 + 930.25}{122}$$

$$= 11 \cdot 2397 \text{ or say } 11 \cdot 24\text{ft.}$$

$$2r = 11 \cdot 24 \times 2 = 22.48\text{ft.}$$

Again sin. L A O E = $\frac{21}{22 \cdot 48}$ = ·9341, the nat. sin. of 69° 5′

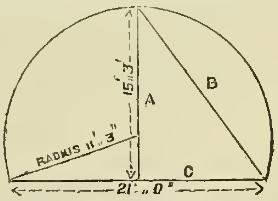
∴ 69° 5′ × 2 = 138° 10′ = L A O B. Hence 360 — 138° 10′ = 221° 50′ the number of degrees contained in the arc A C B. And sin. 221° 50′ = ·666966. Then by form 1 we get

$$A = \frac{(11 \cdot 24)^2}{2}(221^{\circ}\ 50' \times \cdot 017453 + \cdot 666966)$$

$$= 63 \cdot 1688 \times 4 \cdot 524079$$

= 285·78 square feet area of segment. And by using form 2 we get a like result for the area. By the approximate formula (3) we get for the area 286·68 square feet, showing that it gives a result differing very little from the true one.—WILLIAM MOOR, JUN., Hetton Colliery.

[2097] TUNNEL EXCAVATION.—In answer to "Surveyor," I think the following rule will give the area of segment required. To the square of the chord C of the segment add the square of the versed sine V, and to twice the square root of the sum, add the chord of half the arc B. Multiply the result by the versed sine and $\frac{4}{15}$ of the product will give the area.—ZETA.



[2098] SPEAKING TUBES.—If a ½in. water pipe serves for whistle, and a 4in. iron pipe, I see no reason why a ⅜in. composition gas pipe should not do for the whistle, and a 2½in. iron pipe for speaking; the expense would be much less, and in same circumstances should act.—P.

[2104] TEMPERATURE OF DAIRIES.—I am obliged to your correspondent for the information kindly given, but

I do not understand how the right temperature is to be obtained in winter months except by artificial means. A cheese room requires, I believe, an even temperature of 65 deg., both in winter and summer; and in Wilts and Somerset I observe they keep portable stoves to warm the cheese rooms in winter months, a method very undesirable. I cannot see why the dairy floor should be 3ft. below the level of the outside ground. Would "Farmer" inform me if any purpose is gained by so doing? I think without a dry area round all the external walls or similar means, this would only conduce to a damp floor. To construct a cheese dairy for about 90 cows I propose to build it as follows:—Rectangular on plan; size, 36ft. by 16ft. in clear; of three floors - ground floor, the milk room; 1st, floor the cheese room; 2nd, floor a servant's bedroom, the communication to which would be from the adjoining farm house. This floor to be principally to shelter the cheese room from the heat of a slated roof in summer time. In milk room I propose the windows to be four in number, one in each wall, and made with the sashes to slide vertically, that the amount of air to be admitted can be regulated, and had either from the top or bottom of the windows, the glass to be thick rough plate, that it may not admit heat or cold so easily as common glass would do. The window frames externally to be covered with finely perforated zinc. Internally I would for cleanliness plaster the walls with Keene's cement, which would be washable and free from absorption. The temperature regulated by hot water pipes, the water from which would be also used for washing of utensils. Would "Farmer" inform me if he sees any objection to these proposals, or can suggest improvements?—W. W.

[2109] WATER AND LEAD.—Lead may be adulterated with zinc, pewter, old solder, old printer's types, &c., but whether that be so in this case I could not say. Perhaps the water is the sole cause. As a remedy, under the circumstances, wash out cisterns, dry and rub lead with hard brush or carding, then paint them all over with red lead mixed with linseed oil, allowing it to dry properly before letting water in, and after water is in let it stand all night and run it off so that fresh water may be got.—P.

[2110] LOAD FOR MEMEL TIMBER JOISTS.—"Carpenter" should have given the circumstances under which the joist 12ft. by 4ft. and 17ft. bearing is intended to be placed, because if it is to have a plaster ceiling under it its deflection must be very slight under a "fair load;" but if it have to carry its load under circumstances where a considerable deflection would be of no account the fair load might be much greater. However, assuming that the circumstances will allow a deflection in the middle of ½in., the joist 12ft. by 4ft. and 17ft. bearing will carry 4326lb. uniformly distributed over it; or we may say 2 tons. I deduce this from the late Professor Barlow's experiments on the strength of timber, supposing that the Riga fir that he experimented upon was of equal strength to "Carpenter's" memel timber, and this, I think, may be taken as a fair assumption. The specimens that Barlow took for his experiments were, no doubt, of fairly good quality, and so we must assume the joist in question to be. A good deal depends upon the quality of timber (as upon that of every other material) when we are considering what weight it will carry. A knot near the lower edge of a joist and near the middle of its length will materially reduce its carrying power. "Carpenter" no doubt knows that if there be such a knot it should be turned to the upper side of the joist; in that case the joist will be but little reduced in strength.—C. S.

[2110] LOAD FOR MEMEL TIMBER JOIST.—The safe load for "Carpenter's" joist is 51 cwts., which is found by the following rule:—Multiply the breadth in inches by the square of the depth in inches and divide the product by the length in feet. Multiply the quotient by 3 (which is the weight in hundredweights required to fracture a bar 1in. square and 1ft. long), this gives the breaking weight of his joist loaded in the middle. Double the weight will be required to cause fracture when the load is uniformly distributed. The factor of safety to be adopted in practice is one-fourth for a fixed load and one-sixth for a moving load. The joist should be well strutted to prevent twisting FRANK CHESSELL.

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STAINED GLASS.

BEKESBOURNE.—The two lancet windows at the east end of Bekesbourne Church, Kent, have lately been filled with stained glass by Messrs. Lavers, Barraud and Westlake. Each window contains three medallions on a ground of rich diaper work. The two central subjects represent the "Crucifixion" and the "Resurrection of our Blessed Lord." The church being dedicated to God in honour of S. Peter, the remaining four medallions contain subjects from the life of that apostle.

SUTTON COLDFIELD.—One the four perpendicular divisions of the north-east window of the parish church has been filled with stained glass primarily to the memory of the late Mr. T. Colmore, and secondarily as a memorial to Bishop Hacket. The new memorial portion has been executed by Messrs. Valentine, of Edinburgh.

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LAND AND BUILDING SOCIETIES.

NORTHAMPTON FREEHOLD LAND SOCIETY.—The annual meeting of the Northampton Building and Freehold Land Society was held at the Townhall, on Tuesday week, Edwin Marriott, Esq., in the chair. The annual report and statement of accounts were received and adopted. The report stated that 289 new shares had been issued during the year, while the withdrawals had been but 24. The cash received was nearly double that received in the previous year.

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LEGAL INTELLIGENCE.

APPEAL FROM CONVICTION ON STRENGTH OF SUPERINTENDING ARCHITECTS CERTIFICATE.—This was an appeal tried on the 26th ult. in the Common Pleas against a decision of Mr. Knox, the police magistrate, and the circumstances were these. The appellant was a builder in Tottenham-court-road, and in August, 1869, he erected a bay window to a house in Stratton-street, without having obtained the consent of the Metropolitan Board of Works. This consent had been applied for and refused, and the superintending architect of the Board gave his certificate that the bay window was beyond the general line of building. The magistrate considered himself bound by the decision in "Bowman *v.* The Vestry of S. Pancras" to hold the certificate of the superintending architect conclusive, and therefore he convicted the appellant. The question now raised was whether the certificate was conclusive, or whether the magistrate himself was bound to decide whether the window was beyond the general line of building; and the case depended upon the construction to be placed on the 143rd section of the Act 19th Vict. cap. 120. The Court thought that there was great difficulty in constructing the statute, but adhered to their decision in Sparrow's case, that the certificate was not final and conclusive in reference to the line of frontage. There would be great injustice in holding otherwise, because the certificate was framed in private, without hearing parties interested, and was not necessarily published. Further, there might be varying certificates given by successive architects, and parties might not be aware which they were bound by. The magistrate himself was bound to decide whether the building was or was not beyond the line of frontage, and was not precluded from doing so by the architect's certificate. Judgment for the appellant.

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Our Office Table.

ARCHITECTURAL ASSOCIATION. — To-morrow (Saturday), a visit will be made to the works in progress at the South Kensington Museum. Members will assemble at three p.m., at the entrance in the Exhibition-road. On Monday evening next, Feb. 6th, Lieut.-Col. Scott, R.E., will give the first of a course of four lectures on "Limes and Cements," at 7.30 p.m. The second, third, and fourth lectures will be delivered on Monday evenings, the 13th, 20th, and 27th inst. respectively, at the same hour. On Friday next, the 10th inst., the annual members' soirée will be held, at 8 p.m.

A NEW TUNNELLING MACHINE.—An interesting trial has just taken place of one of Brunton's tunnelling machines. A model was exhibited at the last conversazioné at the Institute of Civil Engineers, and at the soirée of the British Association in Liverpool. The present trial was made in the grey chalk at Snodland, Kent, at the quarry belonging to Messrs. Lee & Son., of Holbrough. This demonstration was made chiefly to show the ease and rapidity with which a tunnel may be driven in such a formation as that which lies under the Channel between England and France. The rate at which the machine advanced was 3ft. 9in. per hour, in a tunnel 7ft. diameter, and it was obvious to those who witnessed the operation that the only real limit to the rate of progress would be the rapidity with which the waggons loaded by the machine's own action could be carried away.

EXHIBITION OF RUBBINGS FROM MONUMENTAL SLABS AND BRASSES.—A novel exhibition has been opened in S. George's Hall, Edinburgh, for the benefit of the Sick Children's Hospital. The exhibition consists of rubbings taken from stones chiefly in Argyleshire, and from brasses in some of the eastern counties in England, by "Unda," and they are shown for the praiseworthy object above stated by "Pet Jessie Anne." The pictures —for pictures they are, although of a rude character—are exceedingly interesting. They represent sepulchral slabs containing effigies of knights and saints, priors and minstrels, ornamental crosses and stone tracery.

DEATH OF TOMMASO MINARDI, OF ROME.—A Roman correspondent says:—The grave has just closed over one of Rome's brightest glories in the Modern School of Art. Tommaso Minardi, who, while led by his exceeding modesty to shrink from accepting charges which would have brought him forward under public notice, has amply shown in those works which he has left behind him how well fitted he was to have done so. He is best known to non-Romans by his copy of the "Last Judgment in the Sistine," almost his earliest work, and which attracted the notice of Canova to his rising genius; almost all the photographs sold in Rome of Michael Angelo's *chef d'œuvre* are taken from it, and it was exhibited by the Holy Father in the Exposition of Christian Art last year. His greatest service to the world of art, however, has been the formation of that school of artists whose patient works, too little observed by the world, have, under the present Pontificate, beautified so many churches of Rome with their frescoes. Gagliardi, who has so ably worked at the restoration of S. Agostino; Cochetti, at Sta. Maria in Trastevere; Fracassino, at S. Lorenzo; Guido Guidi, at S. Maria Nuova and S. Andrea della Valle; Bianchi, whose altar-piece in the Canons' Chapel at S. Peter's is worthy of its place among the achievements of the most celebrated masters; Mariani, Consoni, and many others, all owe much to his inspiration, as well as to the attention he enforced on their earlier studies to the rules of perspective and anatomy.

AMERICAN PINE.—The pine forests of Pennsylvania are, it appears, rapidly vanishing. For ten years past the consumption of timber to supply the numerous saw-mills of Williamsport alone has been immense. The *Bulletin* of that place states that the amount of logs "rafted out of the boom" for the present season will yield over 215,000,000ft. of boards. About 300,000,000 are annually manufactured at Williamsport, giving an aggregate in ten years of 3,000,000,000ft. It is impossible that this large consumption of raw material can continue for many more years. It is estimated that in ten or fifteen years the mountains will be denuded of every pine tree, and builders will be glad to get hemlock lumber. The Pennsylvanians may, at least, console themselves by reflecting that they have received their money's worth for their timber, and that it has been consumed in the fair way of business. But not the least serious loss to the French arising from the present war is that of the timber which has been so ruthlessly wasted, and which it will take many a long year to restore.

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MEETINGS FOR THE ENSUING WEEK

MONDAY.—*Royal Institute of British Architects.*—"On Domes." By E. Beckett Denison, Esq., Q.C. 8 p.m.
Architectural Association.—"On Limes and Cements." Lecture I. By Lieutenant-Colonel Scott, R.E. 7.30 p.m.
Society of Engineers.—First Ordinary General Meeting for 1871. Inaugural Address by the President. 7.30 p.m.

FRIDAY.—*Architectural Association.*—Members' *Soiree.* p.m.

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Chips.

The date fixed for the reception of architectural drawings at the forthcoming International Exhibition is Wednesday, Feb. 22.

Mr. James Sant, R.A., is gazetted the principal painter in ordinary to her Majesty, in the room of Sir George Hayter.

An "associated arts" company, comprising painters, sculptors, musicians, and architects, is about to be added to the 38th Middlesex (Artists'), Rifle Volunteer Corps.

We read in the *Academy* that some important rock-cut dwellings, many stories in height, have recently been discovered in Peru.

◆

Timber Trade Review.

PRICES, 31st January, Per Petg. std.:—Skelliftea mixed yellow, 7*l* 5*s*; Bjorneborg yellow, 6*l* 15*s*; do. white, 6*l* 5*s* to 7*l*; Fredrickstadt yellow, 5*l* 5*s* to 5*l* 10*s*? Gefle 3rd yellow, 8*l* 10*s* to 9*l* 10*s*; do. 4th yellow, 8*l* 5*s* to 9*l*.

Vefsen yellow, 6*l* 5*s* to 7*l* 15*s*; do. white, 5*l* 15*s* 7*l* 15*s* Stockviken 3rd yellow, 8*l* 5*s*; do. 4th yellow, 8*l* 5*s*.

Holmsund mixed yellow, 8*l* 15*s* to 11*l* 10*s*; Skonvik 3rd yellow, 8*l* to 8*l* 10*s*; do. 4th yellow, 8*l* 10*s*; Uleaborg mixed yellow, 8*l* 10*s* to 9*l*; Wifsta Warf 4th yellow, 7*l* 15*s*; Wyburg 1st yellow, 9*l* 5*s* to 10*l*; do. 2nd, 7*l* 5*s*, Gamla Carleby 1st yellow, 7*l* 10*s* to 8*l* 10*s*; Husum mixed yellow, 8*l* 15*s* to 9*l* 15; Hernosand mixed yellow, 8*l* 15*s* to 9 *l* 5*s*; Petersburg 1st white, 7*l* 10*s* to 9*l* 15*s*; do. 1st yellow, 10*l* to 13*l* 10*s*; do. 3rd yellow, 7*l*; Pitea 2nd yellow 7*l*; do. mixed yellow, 6*l* 15*s* to 8*l*; do. 3rd yellow, 6*l* 10*s*; do. 4th yellow, 5*l* 15*s* to 6*l*; Soderham 3rd yellow, 8*l* 10*s* to 9*l* 10*s*; do. mixed yellow, 10*l* to 10*l* 15*s*; do. 4th yellow, 9*l*; Sundswall yellow, 8*l*; do. white, 7*l* 15*s*; Sandarne mixed yellow, 11*l* 5*s*; do. 3rd yellow, 7*l* 10*s* to 9*l* 5*s*. Quebec 1st bright; 12ft. 3 × 11in., 20*l*; do. 1st floated, 16*l* 10*s*; do. 1st dry floated, 17*l*; do. 2nd bright, 13*l* 10*s* do 2nd floated, 12*l*; do. 3rd floated, 9*l* 10*s*; do. 3rd dry floated, 9*l* 10*s*; do. 2nd red pine, 11*l* 15*s* to 12*l* 5*s*.

Per 120 12ft. 3 × 9in.—Quebec 1st white spruce, 15*l* 15 to 18*l*; do. 2nd spruce, 13*l* 15*s* to 14*l* 15*s*; do. 3rd spruce, 13*l* 5*s* to 13*l* 10*s*; St. John's white spruce, 13*l* 5*s* Matana 1st white spruce, 14*l* 5*s* to 16*l*.

Timber, per load of 50 cubic feet.—Skelleftea yellow balks, 35*s*; Sundswall fir, 50*s*; Stettin oak crooks, 57*s* 6*d* Dantzig oak, 80*s* to 95*s*; do. oak crooks, 82*s* 6*d*; do common middling fir, 46*s*; do. best middling, 75*s*; do crown, 85*s* to 87*s* 6*d*.

Hudikswall fir, 52*s*; Memel fir, 58*s*; do. Manerlatten fir, 66*s* to 70*s*; Pitea yellow balks, 34*s* to 39*s*; do. fir timber, 42*s* to 44*s*; Quebec birch, 75*s*; do. hickory, 5*l* 5*s* do. elm, 77*s* 6*d* to 90*s*; do. yellow pine, 80*s* to 87*s* 6*d*; do red pine, 72*s* 6*d*; do. wainscot logs, per 18ft. cube, 52*s* 6*d* Riga crown wainscot logs, per do., 5*l*.

Petersburg lathwood, per cubic fathom, 4*l* to 5*l* 15*s* Dantzig lathwood, per do., 4*l* 2*s* 6*d*; Fredrickstadt slating laths, 1*s* to 1*s* 2*d* per 144 feet run.

Dantzig crown deck deals, 14s per 40 feet run; do. crowu brack, 12s per do.

Christiana 1st yellow flooring boards, ⅝in, 8s 3d; ⅞in., 8s 6d per square; do. 2nd yellow, 1in., 7s 6d to 8s 9d, ⅞in. 8s; ¾in., 6s 9d; Fredrickstadt 1st yellow, 1¼in., 13s 6d to 13s 9d; 1in., 10s to 10s 10d; do. 2nd yellow, 1¼in., 9s 9d to 10s; 1in., 7s 3d to 8s 3d; ¾in. 7s 6d; Fredrickstadt 1st yellow, 1in., 9s 9d to 10s 6d; do. 2ud yellow, 1in., 7s 6d to 7s 9d.

Grooved, tongued, and beaded Wyburg 1st yellow, ⅝in., 7s 3d; Dram 1st white, ¾in., 7s.

Brisbane trenails, 40s per 1,000 pcs. 36in.

THE TIMBER TRADE OF LIVERPOOL DURING 1870.

In reviewing the trade of this port in wood during the past year, it will be seeu tbat the total tonnage employed in tbe importation of wood has been 386,184 tons during the past, against 351,954 tons iu the previous year. The business during tbe past year must be regarded on the whole as satisfactory; there having been a sound trade with a steady demand, and prices having been fairly sustained, shippers in most cases have found their operations result favourably. The continental war soou after it broke out caused a sligbt advance in Baltic fir, but beyond this, and checking to a moderate extent the export of furniture woods, it had no influence on our market. This year commences with favourable prospects, and gives hope of an increased demand for most woods, as the timber trade is in a healthy state and business generally in the manufacturing districts is improving, while the stocks now held here are in most cases moderate compared with many previous years.

The total imports from the British North Americau colonies have increased 2¾ per cent. during the past compared with tbe previous year, there having been employ d 266,753 tons, against 252,598 tons iu 1869. From Quebec the import of yellow pine in the log has been the smallest ever recorded, owing chiefly to the high cost in Canada having made shippers cautious iu their operations. The Americans have agaiu been good customers to the Canadian lumber-men, selecting the best qualities, and paying high rates for their requirements; and, so long as the demand continues from the United States, there is probably but little chance of the value of pine logs in Cauada falling to a point which will permit of a large extension of trade with the United Kingdom. The consumption in Liverpool has been steady, and large square pine of good quality and waney board have ruled at high figures, but ordinary building timber has not maintained its price. Pitch pine and Baltic fir, having beeu cheaper, were freely used in substitutiou.

From North Europe the import of fir logs during the past shows an increase of 66 per cent. compared with the previous year, mainly in consequence of an unusually large supply from Sweden, whilst from the ports of Prussia and Russia the import is an average one. There has been a fair consumption, in some measure owing to the higb price of Quebec yellow pine having directed the attention of consumers to Baltic woods as being suitable to their purposes, and much cheaper. No doubt a similar business will be pursued in the forthcoming spring, and nearly clear off the present stock of Dantzig fir before fresh supplies will reach this market. There is a large stock of Swedish fir now held here, say 290,000ft. (uearly three-fourths of the entire stock of Baltic fir), which will be found sufficient at the preseut rate of consumption to supply the requirements of the trade for some months to come. Of deals, battens, and prepared flooring boards, the import during the past shows an increase of 140 per cent. compared with the previous year, but, being in excess of the reqnirements of tbe trade, prices have ruled low. Battens and boards, though they have been freely used in the place of colonial spruce, have at times been difficult to sell, aud just now the stocks of sawu fir are more than double those held at the like time last year, being 8,159 standard, equal to about six months' consumption.

Mahogany.—There has been a steady demand throughout the past year for home consumption, and selections suitable for this market sold readily, though the continental war checked, to some extent, the demand for exportation. Of St. Domingo the import during last year was 657,446ft., against 290,580ft in the previous year, being an increase of 126 per cent. Of Cuba the import during the past year has been the lightest since 1860, being 47,337ft., against 298,962ft. in the previous year. The sales yielded good results, figured logs realising particularly high prices. As tbe stock is exhausted, and the demand buoyant, this market never presented a more favourable opportunity for future business, and first arrivals will meet with ready sale at remunerative prices. Of Honduras, the import during the past year has been 503,882ft., against 1,722,108ft. in the previous year. Of Mexican the import during the past year has been 2,243,580ft., against 2,153,191ft. in the previous year. There has beeu a steady consumption for all descriptions, but prime figured logs from Sauta Ana and Tabasco met witb active competition, and realised good prices.—*Chaloner's Circular.*

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD :—

'ig Foreign	per ton	£17	10	0	£0	0	0
,, English W.B.	do	19	5	0	19	7	6
,, Lead Co.	do	18	12	6	18	5	0
,, Other brande	do	18	15	0	18	0	0
heet Milled	do	19	0	0	19	10	0
hot, Patent	do	20	10	0	21	0	0
ed or Minium	do	19	15	0	20	10	0
itharge, W.B.	do	0	0	0	0	0	0
Vhite Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER :—

ritish—Cake and Ingot	per ton	£70	0	0	71	0	0
est Selected	do	71	0	0	73	0	0
heet	do	74	0	0	76	0	0
ottoms	do	78	0	0	0	0	0
ustralian	do	79	0	0	74	0	0
panish Cake	do	0	0	0	0	0	0
hili Bars, cash	do	64	0	0	65	0	0
,, Refined ingot	do	69	0	0	72	0	0
ellow Metal	per lb	0	0	6¾	0	0	7

IRON :—

Pig in Scotland, cash	per ton	£2	11	6	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
,, Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	10	0	9	15	0

TIMBER.

Teak ....load	£12	10	13	10
Qnebec, red pine	3	15	4	15
,, yellow pine	4	0	4	10
St. John N.B. yellow	0	0	0	0
Qnebec Oak, white	6	0	6	10
,, birch	3	15	5	0
,, elm	4	5	5	0
Dantzic oak	5	5	6	15
,, fir	2	15	4	0
Memel fir	3	0	4	0
Riga	3	3	3	10
Swedish	2	7	2	14
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	4	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.				
Quebec, white spruce	12	10	17	10
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do	12	15	13	10
Archangel, yellow	11	10	13	10
St. Petersburg, yel	12	0	13	10

Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per sq. of 1in., first yel	s. 7	d. 6	s. 10	d. 6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale....per ton	£ 6	10	0	0
Sperm body	80	10	0	0
Cod	35	10	0	0
Whale, Sth. Sea, pale	36	0	37	0
Olive, Gallipoli	49	0	0	0
Cocoanut, Cochin, ton	45	0	0	0
Palm, fine	38	10	39	0
Linseed	30	0	30	5
Rapeseed, Eng. pale	49	0	49	10
Cottonseed	28	0	35	0

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Trade News.

* * *

TENDERS.

Bournemouth.—For new mansion at East Cliff, Bournomouth, for Mr. Cbarles H. Gatty. Messrs. E. Habershon & Brock, architects:

Goltou (accepted)	£3571 17

Nottingham.—For the erection of lock, itch, and skin diseases wards at Nottingham Union. Mr. Walker, architect:—

Marriott & Co.	£3190	0
Claricoat	3154	0
Dennett	3145	0
Ward	3081	15
Messon	2989	0
Bell & Sou	2979	0
Underwood	2970	0
Jelley	2955	10
Barker	2900	0
Middleton	2900	0
Steveuson & Weston	2900	0
Wool & Sleight	2890	0
Lynham	2890	0
Wood & Son	2861	0
Fish	2845	0
Vickers	2840	0
Slim (accepted)	2826	0

Nottingham.—For new Wesleyan Chapel, Mansfield-road, Nottingham. Mr. S. Simpson, architect:—

Slim (accepted)	£3254

Poplar.—For stabling, loose boxes, and sheds to be erected for the London General Omnibus Company (Limited), at Brunswick-street, Poplar, under the superintendeuce of Mr. Foster. Quantities supplied by Mr. W. A. Boltou:—

Brown & Son	£3600	0
James Rutter	3500	0
Bradley	3345	10
Faulkner	3293	0
Potter	3283	0
Wilson	3250	0
Harrison	3050	0
J. D. Cowley	3050	0
Rivett	2992	0
Thompson	2980	0
Wright	2975	0
Preeble	2 58	0
Abrabam	2923	0
Bustou	2881	0
Sheppard	2878	0
Wallinson & Co.	2869	0
Nightingale	2869	0
Turrel	2849	0
Winsbip	2849	0
Flint	2839	0
Eatou & Chapman	2812	0
Blackmore & Morley	2805	0
Crabbe & Vaughau	2800	0
Cripps & Ritsoe	2798	0
A. Ganard	2793	0
Merrion	2757	0
Lacey	2750	0
Wicks, Bangs, & Co.	2689	0
Crockett	2650	0
Langmead & Way	2650	0
Cork & Green	2645	0
Harris	2597	0
Thomas Ennor	2587	0
Hughesdon	2570	0
Stevenson	2555	0
Ford	2498	0
Robert Mann	2433	0
Bleese	2355	0
James Tarry	2319	10

Reading.—For rebuilding two houses and shops for Mr. Richard Attenborough. Messrs. W. & J. T. Brown, architects:—

Matthews	£1649	0	0
Wheeler Brotbers	1600	0	0
Sheppard	1549	0	0
Woodruffe	1530	0	0
Baruicoat	1500	0	0
East	1473	6	6

Rotherithe.—For two uew warehouses adjoining the King and Queen Grauary, Rotherhithe, for Mr. T. D. Barnell. Messrs. Tolley & Dale, architects:—

Couder (accepted)	£6346

Reading.—For restoring the Assembly-rooms, partially destroyed by firo, and converting the same iuto a Tbeatre and Concert hall, exclusive of stage and decorations. William & J. T. Browning, architects:—

Woodruffe	£2350
Sheppard	2110
Matthews	2100
Barnicoat	2085
Grover	1940

Stroud.—For alterations at Avening House, near Stroud, for Edmund Kimber, Esq. Mr. William Clissold, architect:—

Drew	£2441
Harrison	2310
Wall & Hook (accepted)	2198

Stroud.—For alterations at the County Court Offices Stroud, for the Feofees of the Stroud Charities. Mr. Wm Clissold, architect:—

English & Sons	£78

Sudbury.—For new village hospital at Sudbury for Miss Coplaud. Messrs. E. Habershon & Brock, architects:—

Kindell	£695
Haynes	640

Sutton.—For additional buildings at the South Metropolitan District Schools, Sutton, Surrey. Mr. W. Wallen, architect:—

Gammon	36307
Martin	36100
Pollard	35650
Tarrant	35070
Higgs	34700
Manley & Rogers	34677
Crockett	33390
Newmau & Mann	32736
Blackmore & Morley	32408
Myers	32357
Markwick & Co.	32300
Thorn & Co.	32000
Henshaw	31834
Mann	31765
Perry	31587
Capps & Ritso	31290
George	31079
Stiff	33875
Crabbe & Vanghan	30600
Hart (accepted)	23324
Wood	27762

Woodchester.—For the erection of bailiff house, at the Priory, Woodchester, for Mrs. H. D. Cholmeley. Mr. Wm. Clissold, architect:—

Workmau	£214 10

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Whitchurch, Feb. 20.—For the erection of towu-hall and markets in Whitchurch, Salop. Local Board Officer Whitchurch, Salop.

Wharfdale Union, Feb. 9.—For plans, specifications, and estimates for the erection of a new workhouse, to accommodate 150 inmates, exclusive of vagrants, on ground situate at Newhall, near Otley. C. J. Newstead, clerk to the guardians, Board-room, Boroughgate, Otley.

Whitchurch (Whitcburch Local Board), Feb. 20—For the erection of towu-hall and markets in Whitchurcb, Salop. S. M. Lockwood, architect, 85, Foregate-street, Chester.

War Office, Feb. 25.—For works and repairs, and supply of building materials to War Department. Buildings aud property at Ashton-under-Lyne, Birmingham, Bradford, Burnley, Bury, Carlisle, Chester, Coventry, Fleetwood, Hartlepool, Isle of Man, Leeds, Liverpool, Manchester, Maryport, Newcastle-on-Tyne, Northampton, Paull-on-the Humber, Preston, Scarborough, Seaham, Sheffield, Stallingborough, Suuderland, Tynemouth, Weedon, Whitehaven, and York, including the surrouuding neighbourhoods, from the 1st April, 1871, till 31st March, 1874.

War Office, Feb. 14.—For the supply of materials, and sor the performance of such bricklayers', masons', paviors', carriers', carpenters', slaters', smiths', gas-fitters', plasterers', plumbers', painters', glaziers', and paper-haugers' works and repairs (the estimate for any one work or repair not exceeding £300) as may be required by the Royal Engineer Department at the following stations in the Dover district, viz.:—Dover: fortifications and barracks at Dover, and from Dover to No. 1 Tower westward; and from Dover to (but exclusive of) Walmer Castle eastward. Ramsgate; from Walmer Castle, including No. 2 Battery, Sandown, to Ramsgate and Margate inclusive: Canterbury: barracks. Shorncliffe Camp: including the Royal Artillery Barracks, tbe temporary barracks, Sandgate Castle, Folkestone and Sborncliffe Batteries, and towers from No. 1 to No. 9 inclusive. Hythe: including Hythe Barracks, coast defeuces, from 10 to No. 24 Tower inclusive, and Royal Military Canal from Seabrook to Warehorn. Rye: including the coast defences from No. 26 Tower westward to Fairlight, and the Royal Military Canal from Wareborn to Cliff End. T. B. Collinson, Colonel, Commanding Royal Engineers, Royal Engineer Office, Dover.

Bolton.—Contract C.—March 3.—The Corporation of Bolton are prepared to receive tenders for the joiners' work, plastering, painting, glazing, and plumbers' fittings required for the completiou of the new town-hall. The drawings and specifications may be seen, and bills of quantities obtained, on application at the offices of Mr. William Hill, architect, Park-square, Leeds; or at the offices of Mr. George Woodhouse, architect, St. George's-road, Bolton, between the hours of 10 a.m. and 5 p.m., from the 16th day of January next to the 3rd day of February next. Sealed tenders are to be sent in not later than 12 o'clock at noon of Friday, the 3rd day of March next, addressed to the undersigned at tbe Corporation Offices, Acres Field, Boltou, and endorsed "Tenders for the Towu-hall, Contract C." R. C. Hinnell, Town Clerk.

Bakewell (Derbyshire), Feb. 16.—For the new schools. A. Salvin, arcbitect, 19, Cranley-place, Onslow-square, South Kensington.

Bristol Local Board of Health, Feb. 23.—For constructing and completely finishing certain intended brick sewers, valve chambers, and other works in "The Avon Intercepting Sewer District." Length of sewers about 7563 yards, varying in size from 3ft. high by 2ft. 6in. wide to 7ft. 6in. in diameter. John G. Heaven, Clerk, Local Board of Health Office, 13, Prince-street.

Bishop's Stortford.—Contract No. 2.—Feb. 17.—For sewage, screening and storage tanks, engine and boiler-house, and engine-man's cottage, with the necessary connecting pipes and valves, and an approach-road. Contract No. 3.—For duplicate boilers, engines, and pumps for lifting the sewage. William Gee, clerk, Bishop's Stortford

Torquay.—Torquay Hotel Company (Limited), Torquay, Devon.—Feb. 29.—For the erection of additional buildings, &c. Mr. J. Allsop, secretary.

Shoreham and District Water, Feb. 11.—For the machinery, mains, reservoir, &c., necessary for these works. J. W. Wilson, engineer to the company, 111, Victoria-street, Westminster.

Portsmouth, Feb. 20.—For the erection of a church at Portsdown, five miles north of Portsmouth. John Colson, architect, St. Swithin's-street, Winchester.

Guisborough Cemetery, Feb. 10.—For the various works required to be done, viz., the erection of two chapels, gate lodge, mortuary chapel, out-offices, fence-walls, and the effectual drainage of the field. William Weatherhill, Clerk to the Board, Guisborough.

Crewe Local Board, Feb. 15.—For a non-condensing horizontal pumping engine and boilers; also a condensing beam engine and boilers, for their sewage works at Crewe. Frederick Cook, Clerk to the Board, Temple-chambers, Crewe.

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[ADVT.]

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BANKRUPTS.

(TO SURRENDER IN LONDON).

John Dyring, Meads, Leyton, Essex, and Fish-street hill, surveyor, Feb. 10, at 11·30.

(TO SURRENDER IN THE COUNTRY).

Thomas Thorogood, Reabourn, carpenter and builder, Feb. 22, at S. Albans—James West, Chichester, builder, Feb. 16, at Brighton.

BANKRUPTCIES ANNULLED.

James Edward Butcher, Sutton, Surrey, builder, Dec. 21—John Pharmel Ree, Bute Foundry, Cardiff, engineer, Jan. 26—John Stanley, Yarmouth, stonemason, Jan. 26.

PUBLIC EXAMINATIONS.

Feb. 16, G. Roots, Bradburn Riverhead, near Sevenoaks, brickmaker and woodseller—Feb. 22, D. Graves, Birmingham, builder.

SITTINGS FOR LAST EXAMINATION.

Feb. 15, H. Veuthem, late of Chapel-street, Bedford-row, builder.

DIVIDEND MEETINGS.

Feb. 16, S. Keetch, Hornsey-road, Holloway, carpenter.—March 1, T. Davis, Mountain Ash, Glamorganshire, builder—Feb. 11, T. W. & H. Panton, Monkwearmouth, ironfounders.

INSOLVENT DEBTORS' DIVIDENDS.

G. Hinves, late of Park-place, Highgate, builder, div. 5s. 9d.

DECLARATION OF DIVIDENDS.

J. Frayford, Walsall, iron manufacturer, div. 1s. 9d.—T. V. Leverage, Cambridge, builder div. 9½d.—G. King, Cheyne-walk, Chelsea, timber merchant. div. 3s.—H. Ashton, Manchester, ironfounder, div. 1s. 0¼d.

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PARTNERSHIPS DISSOLVED.

Gilbert & Brenchley, Wharf-road, City-road, galvanised iron manufacturers.—Baggeley & Son, Stoke-upon-Trent, stonemasons—Stannard and Barnard, Leicester, architects—Mayer & Co., Old Broad-street, City, timber merchants.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—James Epps & Co., Homœopathic Chemists, London.

ROYAL POLYTECHNIC.—Novel and *bona fide* character of the CHRISTMAS HOLIDAY ENTERTAINMENTS.—PROFESSOR PEPPER on THE WAR, AND THE DESTRUCTIVE IMPLEMENTS USED THEREAT! — MR. GEORGE GROSSMITH, Jun., gives the prettiest Fairy Tale, entitled THE YELLOW DWARF, every Evening; and Mr. SUCHET CHAMPION the same in the Morning, with Vocal Illustrations.—Engagement of the Original Warlock, Mr. J. BEAUMONT, for THE WORLD OF MAGIC, and his Curious Slack Rope Automaton—Entertainment by Mr. E. D. DAVIES Premier Ventriloquist entitled THE FUNNIEST OF FUNNY FOLKS!—MADAME BOUSFIELD'S GRECIAN STATUARY in White Marble. The PRAEGER FAMILY. New Ghost Entertainment. A Machine-made Watch. and Christmas and Christmas Customs, by J. L. KING Esq Admission to the whole One Shilling.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.
FOUNDED 1866.

THE COMMITTEE have the pleasure to inform the Donors and Subscribers that the FOURTH ANNUAL GENERAL MEETING to receive the Report and Balance Sheet for the past year, and to elect the Officers for the ensuing year, will be held at the office of the Institution, 14, Bedford-row, W.C., on . The Chair to be taken at 7 30 p.m., by BENJAMIN HANNEN, Esq., President elect.

At this Meeting the following alterations of rules will be proposed by Mr. Alfred R. Smith, viz. :—

1st.—To erase the first Section of Rule 2, and insert a new Section instead as follows:

"The design of this Institution is to give relief, and grant permanent pensions to decayed clerks, who have been engaged in the Building Trade, their Widows, or if they have been unmarried, their Widowed Mothers, should the same have to the satisfaction of the Committee been dependent on them."

2nd.—To omit the last clause of Section I, Rule 4, and insert the following words:

"A candidate must produce proofs of his or her eligibility to the satisfaction of the Committee."

3rd.—To leave out Section 7, Rule 4, and insert instead as a new Section 7:

"That the pensioners residing in London shall be paid monthly in such way as the Committee shall from time to time determine."

4th.—To take out Section 3 of Rule 6.

The Fourth Election of Pensioners will be held at this meeting. The poll to be held at 5 p.m., and closed at 7 p.m. precisely.

List of Candidates, two to be elected :—Mr. Finch Spencer, first application; Mrs. John Lyon, first application; Mrs. Amos Gibbon, second application.

"All persons becoming Subscribers or Donors on the day of election for Pensioners, are entitled to vote immediately."—*Vide* Rule 3, Section 6.

Voting-papers, containing the Report and Balance Sheet for the past year, and the foregoing proposed alterations of Rules, or any other information, may be obtained of members of the Committee, or at the office of the Institution.

F. T. MULLETT, Secretary.

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THE BUILDING NEWS.

LONDON, FRIDAY, FEBRUARY 10, 1871.

IMPEDIMENTS TO SANITARY PROGRESS.

THE majority of our readers will receive, as we have done, with great satisfaction, the announcement made by Sir C. B. Adderley, M.P., and which we have given in another place, that the Report of the Sanitary Commission is nearly complete, and that Mr. Bruce and two of his colleagues are now engaged in the preparation of a Bill to improve and consolidate the Sanitary Laws. With a more energetic Home Secretary, we should have better hopes of an early result; but so glaring are the defects of the present system—or rather, we should say, no system—and so urgent is the necessity for reform, that we do not despair of a measure passing the next Session of Parliament that will reduce into one intelligible statute the multifarous Acts which have passed the legislature since the Public Health Act of 1848. Never did any body of statutes—and they have been crowded upon one another in every Session of Parliament—more require modification. They have become eminently not only mystifying but mischievous, for it is impossible for any plain man to understand them; and we have known lawyers of large experience in other branches of the law confess their inability to advise for them. They have been hurriedly prepared, and with equal hurry passed through Parliament, to meet some particular emergencies as they have arisen, and without reference to any general principle of sanitary science, or any regard to the common law of England.

At such a moment it may be useful to glance at the origin of this voluminous and unsatisfactory legislation. It commenced with the Public Health Act already referred to, and that measure was, as many of those who promoted it now admit, premature and imperfect. The agitation that led to it originated with the outbreak of cholera in this country, and the inquiries that were set on foot, and the reports founded upon the results of those inquiries, are even now most valuable and instructive documents. It was shown that a large bulk of our population were living in a state little better than savages; that the ordinary decencies of life were not practicable, and therefore the moralities were impossible. These revelations, statistically recorded, interested good and active men of all sects and and all parties; but when practical measures were spoken of, they were opposed by vested interests and by small and close corporations. The sanitary reformers, however, did much good, and conferred a lasting benefit upon the community by the efforts they made to enlighten the public mind; but all social reforms must be slow, and the strenuous demand for legislation was no doubt a mistake, as all law making must be that is not demanded and supported by public opinion. The public at large had no knowledge on the subject, and were not prepared to follow the enlightened few who thought it ought to be the first care of Government to protect the health of the governed. Besides this, there were many political agitations appealing to the people, and these have always the most influence upon the great masses. We believe that it was rather against the conviction of Lord Morpeth, afterwards the Earl of Carlisle, under whose conduct the Public Health Act was carried through Parliament, that he pressed the measure on. He had misgivings that the subject was not ripe for legislation, but he yielded to the pressure put upon him by those who had worked themselves into a state of enthusiasm, and some of whom seemed to feel that an Act of Parliament was the end rather than the means by which the end was to be attained. We had the assurance of several members of Parliament at the time that nothing but the known high character and amiability of the noble lord could have carried the measure through the House of Commons, so strong was the conviction in the minds of many who were favourable to legislative action that there was not sufficient information in the public mind to give the measure its proper and full effect; and they thought it was better to wait until a a complete measure could be passed than accept what must necessarily be an imperfect one.

The fears of those gentlemen have been fully justified, for that imperfect measure has been followed by still more imperfect amendments, and under them local authorities have been formed, which have become an injury rather than a good to the neighbourhood over whose sanitary arrangements they preside. Year after year rates have been levied to carry out ill-conceived and hastily-developed schemes, and the attendant disappointments and failures have led to party strife and bickerings of all kinds, to sordid contentions and quarrels, and comparatively little has been done to effect those salutary changes which the sanguine supporters of the measure expected, and which the necessities of the case demanded. The mania for law-making, which is one of the great evils of our time, has played its gambols to a woful extent with our sanitary laws, and those who will look at Glen's work, "The Public Health and Local Government Laws," will observe that we have been drifting from bad to worse, until the law is in a state of inexplicable confusion. It is apparent that the framers of the laws have rushed from one extreme to another, and have opened the way by which small bodies of men may obtain almost absolute power over a neighbourhood. It matters nothing to the purpose whether such powers are placed in the hands of men who will use them for worthy purposes, or with sinister aims; every observing man knows the danger of breaking down the safeguards which our constitution has built up and fortified against the usurpation of small minorities, to the injury and oppression of the majority.

As a practical exemplification, we may point to our Local Boards of Health. There is a loud outcry against them, and the method adopted by the recent Acts is to give greater facilities for their formation by minorities, while the true method to break down opposition and to make them useful would have been to make them more truly representative. There is no class of institution more unpopular, and why should this be? The objects they aim at are highly desirable, are even essential to social progress. There is nothing unattainable in those objects if they were sought to be secured by patient and business men. Then what is the reason they do not enlist the cordial feeling of the classes that, if successful, they would benefit the most? It is simply because, in most instances, they have commenced on a system of clumsiness which the law has encouraged, and which is always offensive to Englishmen. It is found easy to establish a Board, and the members absolve themselves from the duty of conciliating, or even consulting the feelings and wishes of those who have to contribute the rates. It is strange that in this day an old-fashioned vestry can call a meeting by simply placarding an announcement on the church door, and that such vestry meeting can appoint a sewer authority, and that another vestry meeting can levy rates to cover a large expenditure, an expenditure of thousands of pounds. Many instances of this kind occur to us, but we prefer to cite one, the particulars of which have been supplied to us by a correspondent.

In the Parish of Beckenham a sewer authority has been formed, and, as it appears, has already challenged opposition. This parish is governed by an open vestry, of a very old-fashioned kind, holding its meetings at twelve o'clock at noon. Now this vestry, which might do very well when Beckenham was a village some ten miles from London, is scarcely adapted to the wants of Beckenham when it has become a growing suburb of the Metropolis; nor is the hour of meeting suited to the convenience of gentlemen residing there, but whose occupations are in London. So far as we gather from this report, a vestry meeting of the parish appointed a sewer authority, and this authority forthwith employed a surveyor and prepared a plan of drainage and irrigation the cost of which was estimated at £31,800. When this scheme was so far advanced as to be ready for Parliament, the same vestry levied a rate to defray expenses. This rate was opposed, as it will be seen, by several persons, but without any success, as the magistrates have no jurisdiction. This sewer authority is formed under the Utilization Act of 1867. The letter sent to the magistrates by one of the gentlemen who had resisted the rate is explanatory of the whole case, and is a most suggestive document.

We have no intention of giving any opinion upon the points in dispute, but we think that the principle involved is a most vital one, and we cannot be surprised that the acts of such an authority should rouse the most vigorous resistance. We will suppose, and we see no reason to support a contrary supposition, that the sewer authority is acting with the most perfect good faith, and with an earnest desire to benefit the neighbourhood; but what do we find when we look over the report of the scheme which has been sent to us? Why this—That an outlay on drainage and irrigation works for district with a population of 5,000 persons amounting to no less than £31,800 is contemplated, and the first steps taken by an authority appointed by a vestry convened at twelve o'clock in the day by a placard on the church door, and by an advertisement in a newspaper that circulates in the country. This is all that the Act requires, and therefore this authority has acted legally beyond dispute. No steps have been taken, and none are necessary under the law, to consult the general feelings of the ratepayers as to this large outlay. But there is another feature of the case which it is important to notice.

In looking over the report we find that the sum of £10,225 is set down for works, and £20,800 for land on which to construct sewage farms. The land is estimated at £450 per acre, and belongs to a landed proprietor of the neighbourhood. There is nothing in this but what is consistent with perfect fairness on both sides. But would not suspicion naturally arise in some minds? Mistrust of public men and public bodies is a common feeling, even when the intentions are conspicuously upright; but under these circumstances the strictest scrutiny would not only be justified, but become a duty. Is not £450 per acre a large price to pay for land for irrigation purposes, and would not land of that value be building land, and inconveniently near to an inhabited neighbourhood? But the question left to decide is this—whether it is expedient or right that the settlement of such grave and weighty questions should be left in the hands of a few men elected by such a method as is open under the law. It is a grievous mistake to allow such a body of men to undertake so serious a responsibility, and to leave the great body of the ratepayers so entirely unrepresented. In all remedial measures a sympathy between the administrators of the law and the people is indispensable to success, and where this is destroyed, heartburnings, dissatisfaction, and lasting bitterness spring up. No doubt the new statute will provide a remedy to this serious evil. It is inconsistent with our general principles of legislation, that any authority should be established with rating powers without establishing at the same time the most stringent guarantees against abuse, and no guarantee will be ever found so effectual as that of insisting upon publicity in every stage of its proceedings. Whenever public money has to be collected and disbursed, every reasonable check ought to be imposed upon those who have to expend it.

We observe in the case which we have quoted, that on the appeal of one of the aggrieved parties the case was adjourned. This shows that the justices are not certain as the powers of the law they have to administer, and probably indicated a sympathy with the appellants.

One of the first necessities of the case is to enact that all authorities with rating powers should be elected directly from the rate-payers, and that the initiatory steps should not be taken but on a requisition of two-thirds of the rate-payers, such initiation to be approved by a central authority duly represented in and responsible to Parliament.

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QUAINTNESS OF STYLE.

IN the inaugural lecture of the series delivered by Mr. Ruskin at Oxford on the subject of Art, in his capacity as Slade Professor, there occurs the following memorable passage :—"So far as I may, I shall discourage all admiration founded on quaintness or peculiarity of style ; and repress any other modes of feeling which are likely to lead rather to fastidious collections of curiosities than to the intelligent appreciation of work which, being executed in compliance with constant laws of right, cannot be singular, and must be distinguished only by excellence in what is desirble."

It has been by the powerful and clear enunciation of the broad principles which should govern all the arts that Mr. Ruskin has justly earned his high position as a teacher, and his Professorship at the University of Oxford. We believe, with him, that his "proper function is not to acquaint his hearers with the general history, but with the essential principles of Art." Herein we suspect we shall find the system adopted in his lectures at variance with that of his brother Professor at Cambridge, Sir M. D. Wyatt. To that learned author—we use the word advisedly—we should certainly turn if we desired to glean either the general history of Art, or the particular history of any of its branches ; but we should as certainly not select him as a Gamaliel, to sit at his feet for instruction in the principles which should guide our own practice. With all his acknowledged energy and multifarious reading, we are forced to judge by his works that he has much to learn himself before he can be expected to direct others aright, and he must extricate himself from the unfortunate slough of impurities bred by the Renaissance style which he affects before any preaching as to truth of construction or sobriety and appropriateness of ornament can have much effect from his lips.

The passage which we have quoted above from the inaugural lecture of Mr. Ruskin deserves careful consideration. The quaintness of style which he deprecates is the especial bane of modern artistic work, and particularly in the branch of architecture. We recently, in an article upon the Queen Anne mania, warned our readers of the most recent development of that prejudicial quality. The tendency of the present day is for artists to run into extravagances to secure notoriety. Vanity, of course, is the root of the evil. A royal road, a short cut to fame, is the object proposed.

Art is but a language for the expression of thought, and is liable to the same errors as literal language. The penny-a-liner indulges in extravagances to secure attention, and writes not to teach but to strike. But the vice is not confined to penny-a-liners, since even such an author as Carlyle coins outlandish words and tortures the Queen's English with the same end ; and many of our best poets, such as Browning, often cannot condescend to be intelligible.

So it is with too many of our artists ; they cannot work their way up gradually like Turner, who apprenticed himself to learn all the simple lore that nature teaches, and then to the painters of ancient celebrity one by one, following the secret and practice of each till he could surpass them all on their own ground before he strove to soar after the deeper mysteries which no one before him had gleaned from the more cunning effects of nature, or trusted to the pinions of his own imagination.

So again with our architects. They will run before they can walk. They do not care to be intelligible ; they do not think of their art as a language which they have to master to talk correctly therewith, and the object of which is to convey ideas and be subservient to common sense. When one sees the extraordinary gymnastic pranks of the Mediæval extravagants of the day to attract the attention and extract coppers out of the pockets of the public, we feel inclined to remonstrate with them as the old lady in *Punch* did with the peripatetic street acrobats, and to tell them that we would far prefer to pay them to proceed right end uppermost.

Then how we long to tell the pseudo-Classic students that we are heartily sick of their nonsense verses, and are ravenous for plain prose for a change; that their misplaced columns and entablatures are as patent an offence to the educated eye as gross faults of grammar to the educated ear ; that a pediment broken in the middle is as great a perversion of architectural as a bad pun would be in articulate speech. Had we dared, we should have told Mr. Currey, when describing his gratitude to Mr. Ransome the other night at the Institute of Architects, for enabling him, by the cheapness of his artificial stone, to garnish his S. Thomas's Hospital with some hundred of mock-pots, that we would that the Chancellor of Exchequer would levy a prohibitive tax upon such useless monstrosities. How we would like to fine Messrs. Banks and Barry, or Mr. Cockerell, every time they made a cruet-stand of obelisks, such as those which disfigure the sky-line of the buildings of the former in Victoria-street, and the design of the latter for the National Gallery ; and how we hope that Mr. Ayrton may prevent any such indulgence on the part of Mr. Edward Barry, in the structure which we hope he is soon to raise for the last-named purpose in Trafalgar-square.

We have sometimes rebelled against the Biblical iteration of the use of the several members of the body, and have thought that the most uncivilized savage hardly needed to be so constantly told that his eyes are to enable him to see, and his ears to hear, his hands to handle, and his nose to smell, but really our architects need constantly reminding of the practical use of the simplest architectural features—that doors are for entrance, and windows for admission of light, and roofs to give shelter. What is a pediment but the end of a roof ? If so, why is a hole often cut out at the top of it, rendering it as useful as a hat would be without a crown ?

The architectural profession may well take this counsel to heart, that until they make their artistic language sensible and intelligible, the public will not concern themselves about it. They find it now a strange dialect, which they are unable to comprehend, and which, therefore, they object to have to pay for. In the interest, then, of the profession, as well as that of the public, we would say what we have often said before, and intend to say again—In architectural matters let there be reason in all things, let common sense be the basis of modern practice in this art, and let architects affect neither quaintness nor unintelligibility. "If any man speak, let one interpret, and if there be no interpreter, let him keep silence in the church." G. P. E.

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A new general post office for Colchester is to be built in Hoad-street.

MESSRS. BACKHOUSE AND CO.'s NEW BANK, SUNDERLAND.

THIS building, which has just been completed, from the designs of Mr. George Gordon Hoskins, F.R.I.B.A., of Darlington, has four frontages, which are entirely of stone, the description of work being termed pitched blocker walling, of Pensher stone, with Dunhouse stone dressings. The main front faces the High-street. It is divided into three bays, terminating with gables, with carved stone crockets and finials ; within a panel in each of the side gables, which abut upon Norfolk-street and West Sunniside respectively, is carved the shield from the coat of arms of the Backhouse family, the middle gable being furnished with an oriel window, supported by a buttress and red Aberdeen polished granite shafts with carved stone caps. From the side gables occur certain projections of the quoins or angles forming the ends of balconette cills to the second-floor windows, the corbels supporting those projections being represented by grotesque animals, which have been carved from the architect's design. Other fantastic figures are placed at the angles of the several string-courses. The principal entrance doors and windows on the ground-floor have segmental pointed arches, the mouldings of which consist generally of alternate rounds and deeply-cut hollows, producing a strong effect of light and shade ; these arches are supported by columns of red Aberdeen polished granite, with mid-bands and carved stone caps, the foliage of which is of a conventional character. The entrance to the bank is from the High-street, by a porch or vestibule at the north-east angle, the floor of which is paved with encaustic tiles, executed by Messrs. Maw & Co., the ceiling being of panelled timber. This vestibule is lighted from the east by a large circular window of geometrical plate tracery, filled with stained glass by Messrs. Lavers & Barraud, of London, representing the armorial bearings of the firm. The south wall is furnished with an arcade of segmental pointed arches, supported by columns of polished Cairngall granite, with carved stone caps and cornices. Passing through the swing-doors on the west, we enter the banking room. The size is 34ft. by 28ft. ; but in addition to this the bank proper consists of a second space, 23ft. by 11ft., for the accommodation of some of the clerks, and serves as an approach to the strong-rooms. This portion of the room is divided from the main by an arcade of moulded stone arches supported on massive columns of polished red Aberdeen granite, with carved caps. The whole of the woodwork is of wainscot oak, except the panel moulds of the framing and staffs of the architraves, which are of Spanish mahogany. The room is surrounded by a dado 4ft. high. The portion of the flooring appropriated to the public in front of the counter is laid with the same description and pattern of tiles as those in the vestibule. At the east and west ends of the room are chimney-pieces of black marble, relieved with Egyptian green and inlaid with serpentine marbles, and provided with black marble fenders and tiled hearths, executed by Messrs. Nelson, of Carlisle. The private office has its entrance from the public portion of the banking-room, the furniture being specially designed by the architect. The portion of the building above the bank proper is arranged as two commodious dwelling-houses, with their entrances on the east and west fronts. These are occupied by two of the clerks. The contractor was Mr. George Gradon, of Durham ; the carving has been executed by Messrs. Farmer & Brindley, of London. The works have been in hand a little more than two years.

[We hope to give an exterior view of the building next week.]

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Royal Albert Hall.—We understand that at the ceremony of opening the hall by the Queen on the 29th of March, an officially-reserved free seat will be offered to the Mayor, Provost, or Bailiff of every place in the United Kingdom which paid £100 and upwards to the subscription fund of the Exhibition of 1851.

London and County Banking Company.—The usual half-yearly meeting of this Company was held on the 2nd inst. A dividend on the capital of the company was declared at the rate of £6 per cent. for the half-year ending Dec. 31, 1870, with a bonus of 3 per cent., payable on and after the 13th at any of the company's banks. Good fortune, the result doubtless of good management, certainly continues to attend the operations of this bank.

THE NEW LOAN PICTURES NOW ON VIEW AT THE SOUTH KENSINGTON MUSEUM.

SURELY this generation has grand opportunities for studying art! If culture in this direction is the way to make the masses love the beautiful, and culture in art is to be obtained by seeing good works of art, then even people who are unable to pay a shilling to view the Old Masters at the Royal Academy may see them, and fine specimens of them too, for nothing, at the South Kensington Museum. Leslie was wont strongly to impress upon young painters the desirability of remaining in London to learn their profession, instead of travelling on the continent in search of art-knowledge. If he held such opinions in his day, surely they would be greatly strengthened now. Let us consider, for instance, the many fine collections lent on loan to various exhibitions, and the number of rare old pictures exhibited in London since October last. First there was exhibited at the Institute of Painters in Water-colours a very fine collection of the works by the earlier members of this branch of the profession; then in the Suffolk-street Gallery were exhibited, also to benefit a charity, a number of Velasquezes and other valuable paintings. In January the Royal Academy opened its second Old Masters' Exhibition; and the South Kensington Museum, besides having on view the collection of Lord Elcho and several of Lord Westminster's finest pictures, has now within its walls a splendid collection (with some exceptions) formed by the late Munro of Novar, now in the possession of his sister, Mrs. Butler-Johnstone. Not but that even there it is a pursuit of knowledge under difficulties, for the authorities seem to be not overburdened with space for exhibiting their treasures; and large as the museum is, it appears not large enough for the number of works of art it has to contain. The present collection is placed about on screens upstairs and downstairs, and to find the various pictures we must wander about from one gallery to another, till our sense of locality is hopelessly disturbed and paralysed. In the gallery where Lord Elcho's pictures are placed is a very fine Rubens hanging on the screen. The subject is the Virgin and Infant Saviour, with S. Elizabeth and S. Joseph. The drapery of S. Elizabeth is painted with great vigour, particularly the fur, which is very finely handled. Rubens is not the painter we should choose for the delineation of sacred subjects; and in this instance, though he has produced a real work of art, it is not at all religious in feeling. Any one wanting to see the *bravoura* of execution, and the perfection of rich juicy colour, should study Rubens, and this picture particularly, but for religious feeling he must go to the Italians. Another fine colourist, but of modern times, whose pictures hang on a screen in the next room, is Etty. His "Good Samaritan" is perhaps one of the happiest efforts of his brush. It is of small size, but very fine as to colour. The head of the Samaritan is grand in character; he has dismounted from his ass (which is caparisoned rather after a Spanish than an Eastern manner) and is pouring oil into the wounds of the disabled voyager, whose flesh, by the way, is rather that of a man in prime health than of a traveller stripped and half dead. In the distance, the men who have passed him by on the other side slink meanly away. Another fine Etty is "Diana and Endymion." The painter has so contrived the figure of the goddess that she takes with her floating and white gossamer draperies, almost the form of the crescent moon. The shepherd Endymion is reclining asleep against the heathery cliff, with his sheep dog at his feet. Underneath this work is a picture of three nymphs, very fine in colour, with the flesh beautifully painted. The rich hues of the suspended drapery enhance with great effect the delicate tones of the flesh. This collection contains no fewer than five fine Turners. The most splendid among them is, perhaps, the "Venus and Adonis." In treatment it is something like Titian, and the arrangement of the background reminds us of the Peter Martyr. The ramping dogs are as fine as Snyder's. Perhaps this is one of the best works for understanding the versatility of Turner's uncommon talents, and the easy way in which he could throw himself into the spirit of another painter. Indeed, in one of his pictures, "The Blacksmith's Shop," Turner was accused by Cunningham of trying to injure the art of Wilkie by an imitation of his peculiar manner, but it was only one of the eccentricities of Turner's genius, showing how, under all circumstances, he is truly great. Another very fine work by him represents the winding of a river passing through a city, and gradually widening and broadening out in the distance to the blue sea, which, in its turn, merges almost imperceptibly into the brilliant summer sky. On one side of the river rises in terrace upon terrace the fair Italian-looking city, glowing in the sunlight. In the foreground wave such trees as only Turner paints, not individualised but poetically rendered, while behind them in the middle distance are the rosy mountain peaks. The reflections in the calm blue river are wonderfully given. The sky appears to us a little injured in some places, and there are some dirty marks upon it, which might advantageously be removed. "The Piazza of S. Mark" is painted with a cold evening light. Some festa is taking place, for many people are gathered on the piazza, and fireworks are being let off from boats on the canal. The fourth Turner has for its subject the setting sun in some great city. The yellow sun reflected in the water is gradually sinking in the west, but has still power enough to light up with golden colour the walls of the palaces on the brink of the river—such palaces as seem only to have been imagined in dreamland, not to have ever been seen on the common earth. Turner almost always contrives to do this. He lifts you above and beyond those regions which people can see with their own eyes, into something usually reserved for the vision of the poet alone. The least attractive of his works here is "The Avalanche," which appears to us dirty, and not handled with his usual power. In the Cartoon Gallery, also placed on screens, hang perhaps some of the greatest gems of this collection. Among them is a very fine Rubens of "S. Sebastian," rather larger than life, painted coarsely perhaps, but with masterly vigour of execution. The saint is tied to a tree, the only light in the background being a ray of light against the horizon. Near to this picture is placed a fine Ruysdael, a sea-piece, or rather a storm at sea, with ships in the offing trying to make the harbour. The picture has rather blackened with time, but the dash of the waves is excellently rendered. A still finer Ruysdael is placed below in the North Court. It is a landscape. In the middle distance rises a hill crowned by a castle, and in the foreground a wide stream, its banks clothed on either side by pine trees beautifully painted, rushes by, breaking with force over its rocky bed. Near to this picture is a good Claude, which has been much spoiled by re-painting. Though not done at this painter's best time, it is yet a fine work, and might be set right easily by a good repairer. But to return to the cartoon gallery. The Murillo, placed on the centre screen, is finer than any in the present exhibition at the Academy. The subject is S. Francis kneeling, and holding in his arms the Infant Christ. On the left hand are some cherubs very beautifully handled; one holds in his hand a branch of lilies, emblem of purity; another keeps open the saint's breviary. This is a grand specimen of Murillo's powers, and is not at all black, as are some of his works. The peculiar treatment of the cool grey of the monk's garment should be noticed. Beneath the "Murillo" is a very learned picture by Annibal Caracci. It is one of the best examples of the Eclectic Bolognese School, which, notwithstanding its great efforts after the best of every school, fails, perhaps by its many-sidedness, fully to equal any. This picture should be studied (for it has evidently been painted with much study) and the reason why it fails to bear off the palm of superior excellence inquired into. The drawing throughout is most beautiful, and the composition graceful and complete. Venus is looking at herself in a mirror held for her by a little Cupid, while two of the Graces are arranging her hair. The action of the nymph who is braiding the golden locks of the goddess is very lovely. Several beautiful little Cupids also assist at the toilet. Next to the Caracci is a remarkable Rembrandt, called "Lucretia." The painter has succeeded, as he always does, in producing a noble work, by his colour. Observe particularly the rich golden drapery of the dress, and the masterly painting of the white round the opening of the bodice. It is in the spiritual and mental side of the portrait in which the material and phlegmatic Dutchman is unsuccessful. Who would take that face to represent the noble Roman matron? As a piece of painting, it is indeed very perfect, but as a piece of æsthetic excellence it is devoid of soul, and nothing less than a failure. As a pendant to this hangs one of the best of the Guidos here, "S. Sebastian," full of life and vigour, with almost a boy's face. The unpleasant tone of some of this painter's works, produced no doubt by the showing through of the terre-verte grounds he laid in for his flesh, called his silver tone, is not visible in this picture. It is, however, very apparent in some other works by him in this gallery. On the opposite side of the screen are placed two fine works by Paul Veronese; one, a Venus and Cupid, with the drapery most elaborately finished; the other, a saint asleep on a marble seat, with two angels in the air bearing a cross towards her. The action of the saint is very graceful and elegant, but the beautiful tones of colour which we know must be there are invisible in consequence of the exceedingly dirty state of the picture. The noble Vandyke, "The Entombment," has been much injured by a thick coating of nasty yellow varnish, besides which a foot of canvas has been added at the top of the picture, greatly deteriorating the composition of the work, and being very injurious to the picture, because, as the repairer was unable to paint like Vandyke, he has been forced to paint out the luminous sky of the painter in order to make it agree with his own muddy enlargement. We entreat the owner to have this defacement removed from the picture, which is really a grand work of art, and to restore the canvas to its original size and shape. The figures of the Virgin and Mary Magdalene holding in their arms the dead Christ are very beautiful; S. John and another woman are kneeling by, while a little child points pitifully to the marks of the nail in the Saviour's hands. Near the Vandyke hangs a curious Jan Steen; the subject is not a pleasant one. As a pendant to it is a picture of "Susannah and the Elders," by Bassano. "The Offerings of the Wise Men," called a Titian, is more probably a Tintoret, or even a Bassano. The grouping and composition are finely managed, and the white horse in the foreground is exceedingly well painted. The Virgin in this picture, though ugly, has a sweet expression of face; on her knee is the Infant Saviour, whose feet one of the wise men approaches to kiss. In the background some camels and negro attendants are introduced. The blackness of this picture is partly attributable to age and ill-treatment, through which, though, the fine Venetian method is apparent. In the room where Lord Westminster's pictures are placed, are some fine Watteaus also belonging to this collection; they are of a larger size than this artist usually painted, and considered very fine specimens of his art. There is also a beautiful little landscape, by Poussin, and a good portrait of a lady, by Rubens, more like Vandyke in manner. Below, in one of the courts, amongst other pictures is a work by Stothard, illustrating part of the Allegro. It is painted with much grace and elegance and true delicacy of feeling. The girl is such a sweet and maidenly representation of gaiety, and though the drawing is deficient, the sentiment is very beautifully given. Some pictures, said to be by Wilson, are evidently either inferior copies or spurious works. In conclusion, we must beg our readers to take an early opportunity of visiting this collection, in which there are many good pictures besides those we have mentioned, for it is chiefly by the careful study of the old masters that we arrive at a just and due appreciation of the beautiful in art.

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LIMES AND CEMENTS.

LIEUT.-COL. SCOTT, R.E., delivered the first of a course of four lectures on limes and cements before the Architectural Association on Monday evening last. The hall was full. Mr. T. H. Watson, President of the Association, introduced the lecturer.

Lieut.-Col. Scott commenced by observing that the subject of limes and cements was one which awakened very little interest amongst workmen, and met probably as little attention from those whose task it was to direct the building of works. Mortar-making was generally given over to the labourer, who compounded it pretty much according to his own fancy ; his first desire being to save himself as much trouble as possible, his second to satisfy the bricklayer or mason who had to use his preparation. A strange confusion had hence arisen as to what really constitutes the right proportions of sand and lime to use in preparing a given quantity of mortar. The mason or bricklayer mixed the ingredients in that proportion in which he could use them most readily, but it by no means followed that what was most convenient to him was most suitable to the work he had to perform. The different kinds of lime in use were greatly dissimilar in many respects. The white chalk, as far as building purposes were concerned, yielded a lime very much inferior to that which was yielded by the lower chalk limestones. The latter were hardly worked at all in this country from the prevailing ignorance concerning their utility. At the risk of being charged with egotism, he must here refer to instances he had had brought under his own notice, in which the ignorance of limestones and limes had been more or less displayed. When he was a very young man he happened to be employed at Gibraltar ; amongst other duties one was to superintend the construction of a revetement wall. The wall in front of which the men under his orders were building was an old Spanish wall which supported a large quantity of sand, and in making the excavation in order to put in the foundation they came upon a bed of hard shale. On a Saturday evening he left this shale in a firm, solid condition, and on the Monday following it had assumed a liquid form. It let out the sand, and the whole mass falling very nearly buried the men beneath it. What could have caused this change was the question naturally asked. It was only to be traced to the presence of a small quantity of sulphuret of iron which had attracted oxygen from the atmosphere. The curious part was that at that time they were bringing their cement from England in order to put it in this foundation, whilst these deliquescing stones which they were excavating formed, when properly prepared, quite as good a cement as that which was being imported. The captain associated with him in this work was a practical builder, and used to apply this test to the cement in ordinary use : he would thrust his hand into a barrel, and if the cement felt warm it was good, but if cold, he usually concluded that it had been ruined in the transfer to Gibraltar. The fact of its being warm was a proof that it had not been quite spoiled—that was all. Some time after, at Plymouth, he found other beds of lime, which gave a capital hydraulic lime. Whilst experimenting on these stones he found a curious effect produced by a dull fire ; he was at a loss to understand it, but he found that the lime, instead of slaking and heating as it should have done, set into a solid hard mass when ground to a powder and mixed with water. He consulted Dr. Faraday respecting this, and they came to the conclusion that the change was due to the formation of some form of "subcarbonate of lime." Subsequently it turned out that the action was due to the presence of a small quantity of the sulphate of lime which had been formed from the sulphuret of iron in the coal. When he mentioned this to Dr. Miller (his master in chemistry), that gentleman could hardly believe it possible that lime could have been used for 4,000 years, and such a simple fact never before have been discovered. A little later he had to visit Barrow, which has a celebrated lias quarry. The limestone there occurred in several layers varying from a foot to 5 or 6in. in thickness, with considerable bands of clay between them. They varied much in composition. Some of them had more clay in them than others, and these were not very readily slaked when dealt with as mortar, and the consequence was that these beds were looked upon rather as an injury than otherwise to the other lime which was made. These were called Rummel beds by those using them, whilst another bed was termed "good for nothing," its supposed quality being thereby indicated. From the outside of their best stones the men cut off chippings, which were thrown back into the pit. If they wanted ground lime their practice was to grind up the best lump-lime they had ; but he pointed out to them that they would make better ground lime if they mixed together the three kinds of lime indicated, viz., the "Rummel," the "good for nothing," and the "Slavin" beds, and was at last successful in persuading them to adopt this plan. One fact in connection with this incident ought to be mentioned, to the honour of the Messrs. Ellis, the owners of the works. They wrote some time after to tell him that his suggestion would turn out much to their advantage, and that as a token of their gratitude they proposed to give him a shilling per ton for seven years. This course had been pursued, the quantity had been continually increasing, and all he regretted was that his seven years expired next Christmas. He had seen another curious mistake with reference to the use of lime in London. He imagined he had seen something very like lias lime or grey lime thrown into the Serpentine for purposes of purification. He was certain, however, that six years ago large quantities of grey lime were thrown into the Thames during a very hot summer for similar purposes. One of the grey lime manufacturers told him he was supplying a large quantity for the Thames, and on being asked why the authorities did not get the white chalk lime from Gravesend, the reply was, "That is their look-out ; my business is to sell lime, not to teach my employers chemistry." By using grey lime 20 per cent. was wasted, and in addition the authorities paid something like 2s. a yard more for it. Having given these examples of the ignorance displayed by those using lime and cements, the lecturer proceeded to speak of substances which were concerned in limes and cements, and the origin of those substances. He exhibited to a diagram, on which were mentioned the substances chiefly found in hydraulic and common limes. Without going into the geology of the earth's crust, but taking granite as a sort of starting-point, he pointed out that acids would decompose substances such as were contained in granite. The whole, indeed, of the substances which were found in the older beds of the earth consisted principally of silicates of lime, alumina, iron, with some alkalies. These silicates were decomposed by acids. Rain found carbonic acid in the atmosphere, and, charged with this carbonic acid, decomposed a silicate of lime, and as a result a carbonate of lime was formed and the silex set free. These were washed down by rivers, and the grosser portions were obtained as sand, a great deal was carried down as carbonate of lime in suspension, and a portion also was brought into solution and carried into the sea. If the carbonate of lime was deposited without foreign admixture and the deposit subjected to heat, a crystalline limestone was obtained ; if clay was deposited with the carbonate of lime, a hydraulic limestone might be the result. Speaking of the portion in solution, the lecturer said that a part flowed into the ocean, and there underwent a marked change, being dealt with by organic life. Of the portion carried down in suspension the quantities were really enormous. The Gauges, for instance carried down 500,000,000 tons per year ; the Mississippi, 300,000,000 tons per year ; the Irawaddy 100,000,000. The whole of Holland was composed of matter in fine suspension which had been carried down from the Rhine. If they came to the chemical deposits as contra-distinguished from such deposits as had been held in suspension, and took carbonate of lime as an example, they found that at Carlsbad there was a spring of water issuing from the earth charged with carbonate of lime, and when some of the carbonic acid evaporated, there was enough carbonate of lime deposited to form large beds and be used for ornaments. The like was also to be seen in Tuscany, and in various parts of Asia Minor, particularly at Smyrna. At Gottingen there was a stream of water used for turning a mill, which so filled up its channels that they had constantly to clear out the deposit. Near Rome, also, examples of the same sort existed. The matter brought down in solution was deposited by a chemical process, either by evaporation or the escape of carbonic acid gas, which held it in solution. He would now say a few words on the effect which organic life had upon carbonate of lime and silicic acid in solution. One part of carbonate of lime was soluble in 10,600 parts of water, and we might assume that sea-water contained about one-ten-thousandth part of its weight of carbonate of lime. An immense quantity of this carbonate of lime was taken up by oysters, corals, animalcules, and other living organisms. It was common to talk of a man as "drinking like a fish," but to say "drinking like an oyster" was perhaps more expressive. Supposing they were to take a man 75 years of age, put him into a press and squeeze him out, there would be obtained from him 45lbs. of solid matter, and 5½ pails of water. A man in the course of 75 years drank as much as a thousand times his weight of water ; but an oyster, supposing that it could extract from sea-water as it passed through its stomach every particle of carbonate of lime which the water had in solution, would pass through its body something like 50,000 times its weight ; and yet, notwithstanding this, the water flowed down on the Rhine contained sufficient carbonate of lime in solution to supply shells for 300,000,000,000 of oysters. But what the oyster would do in this way was nothing to what the coral was capable of doing. After speaking of the use of oyster shells and coralline limestones for lime, the lecturer proceeded to remark that carbonate of magnesia was also dissolved by water, but was not so soluble as carbonate of lime. There was very little of this found in animals, but it was abundantly taken up by sea-plants. As carbonate of magnesia was taken up by sea-plants, and by animlas, a tendency to the separation of these two substances ensued. Turning to the chemistry of his subject, the speaker first dealt with carbonate of lime, which, he said, consisted of lime and carbonic acid gas. If he put carbonate of lime into a fire and burnt it, the carbonic acid gas was driven off, and lime remained, and if he put carbonate of lime into a vessel and treated it with acid, carbonic acid would be given off. In this case they would not have lime remaining, but a substance derived from the muriatic acid, hydrochloric acid, and lime. The lime obtained by burning was a white substance which phosphoresces under heat, and which when treated with water, underwent a violent change. When the hydrate of lime formed by treating the lime was mixed with sand, made up into mortar, and then exposed to the atmosphere, the substance slowly returned to its original condition. One part of the hydrate of lime was soluble in 800 parts of water. The carbonic acid gas of the atmosphere was small in quantity, and could never penetrate to a great distance below the surface, the consequence being that they could never get a very good result out of pure lime, such as could be obtained by burning white chalk. Many persons supposed that mountain limestone would give a very good lime, and in some senses it would do this. It was a good lime for the smelter, the candle-maker, and the soap-boiler, but it was not a good lime for the builder. Alberti, the architect, who had written much on the subject of limes, asserted that he had seen lime more than 500 years old, which had been found in a pit, and which even after that period was well tempered. Dr. John, a German chemist, found at Landsberg, in a pit at the basement of the castle of that name, lime which had been there 300 years, and which was used again in rebuilding the castle. It must be clear that if lime could remain in that condition without undergoing any change if protected from the atmosphere, they would not get any very good result out of it. As long as hydrate of lime remained wet, it was simply a pulp or paste ; when it became dry it was little better than dust. Carbonate of magnesia when burnt yielded magnesia, which was not so soluble as hydrate of lime. A hydrate of magnesia was soluble in 5,000 parts of water, as compared with 800 parts of hydrate of lime. The former had been used as a hydraulic lime in Madras and elsewhere. When they got substances with the lime, such as silex or clay, they found a different set of reactions took place, and were then no longer dependent upon the carbonic acid of the atmosphere for setting properties. Supposing they put silex and lime together, and heated them, a change took place in the former, and from being a substance very insoluble in acids, it became gelatinous, and altogether altered in character. The lecturer here showed a specimen of good grey chalk lime, which had been treated with acid. If, he said ,his hearers examined the residue at the bottom of the vessel, after the lime was dissolved, they would find a somewhat gelatinous mass. This was the silex. When they mixed the grey lime with water and made it into a paste, the silex and the lime formed, together with the water, a hydrated silicate of lime. Here then they had a substance which would set without the influence of the atmosphere. Such a substance as this would not have remained like that found at the castle of Landsberg. It would have hardened into a solid mass. It was only such a lime as this as was fit for heavy masonry, or any exposure to damp or wet. If they took lime and pure silex and treated them in this way after burning them together, they did not get a substance which set quickly when water was added, and the whole was made into a paste, but if they got iron or potash and soda present, they would find that quicker action took place. Silex was, in fact, a substance which combined more readily with several bases than with one. Roman cement set quickly for this very reason. As regards sulphate of lime, the lecturer said that one part was soluble in 500 parts of water. It was, therefore, manifest that this was a substance still less able to stand the action of wet than pure lime. Good use, however, might be made of it for inside work. Sulphate of lime contained too within itself the power of setting. When exposed to the action of heat, it lost a portion of its water. If the whole of the water were driven off, it did not set rapidly again ; but with three parts driven off, then, when mixed with a fresh amount of water, it rapidly passed into a solid state, and combined with the water to form the hydrated sulphate of lime. It could only be used for plastering and inside work. The lecturer here made a few observations relative to the action of sulphate of lime in controling the action of lime. If water were added to quicklime, the quicklime rapidly fell away to a fine powder. If they took the lime and impregnated it thoroughly with sulphate of lime, then they would find that it would no longer undergo the slaking action. What the theory of the thing might be one could hardly say with any certainty. In concluding this portion of his subject, the lecturer said he had dealt with three different classes of subjects. First of all there was the pure lime, the oxide of calcium, which combined with water and made a soluble substance, and which could only be hardened thoroughly by the action of the carbonic acid of the atmosphere, which never penetrated it to a great distance. Next, the silicate of lime, which might or might not be mixed with iron, alumina, magnesia, and so on, which had the power of combining with water, and by degrees set into a hardened mass ; but this rarely took place with very great rapidity, unless large quantities of such substances as potash, soda, and iron were present. The water had to dissolve by degrees particle after particle, so as to bring it into close contact with the silicic acid. Silex and lime did not enter into a silicate form in the burning of limestones, but only approximated to it until water was added. Then they came to the third class—the sulphate of lime, which was totally unfitted for anything but inside use. He would now say a few words on the question of chemical equivalents. After alluding to the symbols in common use to denominate different substances, as appeared on a diagram, the speaker said that the first point to be remembered was that wherever they found such a substance as lime, the proportion of oxygen and calcium in it always was constant. Next, when they had found the proportion in which oxygen would unite with calcium and the proportion in which oxygen would unite with hydrogen and combine with magnesia, they know the proportion in which oxygen would combine with any other substance whatever. Again, when they had found the proportions in which, for instance, one substance mentioned on the diagram (sulphur) would combine with three parts of oxygen, and also found how oxygen would combine with calcium, they would know the proportion in which an oxide of calcium would combine with sulphuric acid. Referring again to the diagram, the lecturer said that the various numbers on it were so far arbitrary as this : they assumed oxygen to be eight, but they might as well assume it to be any other number except for facility of calculation. This gave the symbol for hydrogen as one, the result being that the chemical equivalent of water was nine. If he put a dose of water, nine parts by weight, to a dose of oxide of calcium in 28 parts by weight, the two would combine to form 37 parts of the hydrate of lime. If he took 40 parts by weight of sulphuric acid, they would unite exactly with 28 parts of lime, and so on. The symbols not only represented what were component substances but also the actual quantities in which they combined. He had divided them into two classes : substances primary and secondary. As respects the question of mortars, he would say that when lime and silex together were exposed to the fire, great heat must be applied to fuse them. Supposing they put in a little potash or soda, then they fused readily. It was really another instance of what he had before said—that silex would combine much more readily with several bases than with one. He was now speaking with reference to the action of heat upon it. In those cases where lime and silex were found together, the action was not so ready as when there were several bases. Roman cement stone, for instance, had a very large quantity of peroxide of iron, and set with great rapidity ; also, if Roman cement were burned at a high temperature, fusion was readily produced. Referring to another diagram, the lecturer was able with its assistance to show the proportions of clay in limestone as found at some quarry works near Bridgwater. In some beds it was as high as 25·55, in others as low as 11·95. If these beds were all burnt together some of them would be overburnt, and some underburnt. The quarrymen took the lower beds out (those that contained 25·55 of clay) and burnt them for cements. The others were burnt for lime, and as lime sent into the market. In conclusion, Lieut.-Col. Scott stated he had consented to deliver this course of lectures solely with the idea of helping the younger members of the Association, and principally at the request of Mr. Redgrave. Some chemical experiments were then made in illustration of the lecturer's remarks.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. ZERFFI delivered the seventeenth lecture of this course on Tuesday afternoon last, in the Lecture Theatre, South Kensington Museum. The lecturer, in introducing the subject of Greek furniture, observed that whilst our own times were distinguished for the productions of tektonic art, Greece had been altogether monumental in her tendencies, and had cultivated, with special preference, stone and marble work. The principles of furniture construction are, to a certain extent, identical with those of architektonic, but there was naturally some difference, as the one had to deal with movable objects made of light materials, whilst the other treated hard materials and constructed immovable monuments. Wood had been the principal primitive element of all products of construction, just as clay had served in ceramic art and sculpture. In the construction of furniture, the two conflicting forces, the static and the dynamic, must be clearly united for a certain purpose. The properties of the wood or other material to be used must be carefully studied, and its fitness either to support or to be supported considered. Modern furniture, more especially that of French pattern, was often badly made, the wood being curved into ornamental forms without regard to the fibres, &c., thus causing it to snap. We might learn from Greeks, Egyptians, and even from the Chinese, how to bend wood artificially when still filled with sap, so as to form solid curves. The furniture of the Greeks had consisted of (1) chairs ; (2) couches, which also served as beds ; (3) tables ; and (4) chests The decoration resembled that on the vases and on dresses. Much metal and ivory was also used. The most important piece of furniture was the *thronos* or *klismos*—the easy chair. The legs, arms, and backs of these were ornamented with animal forms, amongst which the sphinx, lion, leopard or tiger were the principal. These couches were at first simple in form, but subsequently they were decorated ; they were also covered with carpets, mattresses, and round or square cushions. As the Greeks wrote and took their meals in a reclining posture, their tables were very low. This article of furniture was found in great variety. The legs were treated with great care, and generally carved to imitate those of animals. In form these tables were usually square. In Greek tektonic art four distinct styles, representing periods of development, might be traced : (1) the Archaic, characterised by rough and architectural forms ; (2) the Early Doric, corresponding to the time of the introduction of the wheel into pottery, after which the wheel was also used for turning ; a great resemblance was to be observed in the products of the two different materials, the circular vase form in the legs of articles of furniture having been most prevalent ; (3) the elegant or Ionic, during the time of the tyrants (560—506 B.C.), was distinguished by the introduction of metal, the use of which in household furniture enabled the artist to combine great elegance, lightness, and ornamentation with durability and excellence of pattern ; (4) the finished Doric-Ionic, or, more properly speaking, Attic style, during which the old motives were taken up in new forms. With sculpture a reaction against metal work had set in, and certain articles became monumental again. Candelabra, thrones, vases, and tripods, were made of marble and ivory. A fifth period, the Macedonian, could hardly be said to have produced a Greek style, as it was entirely characterised by Asiatic motives. It was distinguished by great luxury ; the couches were covered with purple, and constructed of gold and silver. Golden arbours, baldachins, &c., were also made, all in the Assyrian style. Referring to the every-day life of the Greeks, Dr. Zerffi observed that water-clocks and sundials were used to measure time ; the toys for children, many of their games, &c., were almost identical with those of our own times, and they possessed a great variety of musical instruments. As in their poetry and philosophy, he continued, so also in everything else, the Greeks were animated and guided by an unfettered love for beauty and freedom. Their architects regulated the monumental enterprises of the ancient Asiatic world, and produced real works of art. Their sculptors, in perfect accordance with the general laws of gradual development, were not satisfied with merely reproducing inert matter, but from contemplating the universe had turned to the consideration of themselves. Prior to becoming metaphysicians they had studied anatomy, and before occupying themselves with psychology they had made themselves acquainted with physiology. In considering their sculpture we found that the Greeks had made a progressive step in the development of humanity. The architect had to deal with dead matter, and could use it only to express geometrical forms and truths. He could appeal to us through symmetry and proportion only ; his language was monumental, expressing always one idea. The sculptor went farther ; he imitated the highest power of creation in not only producing a form but also in inspiring it with an idea. He did not satisfy our want of shelter, but elevated our feelings to seek a mental occupation when under shelter. He did not reproduce an inert mountain, or a cave, but human beings with all their passions and feelings. Contrasting in this respect with the Orientals, who had never embraced Nature with a free consciousness, the Greeks had freed themselves from all fetters, and became by degrees capable of reproducing the human form in all its genuine beauty. They had done this after long study, and after nearly two centuries' practice in their gymnasia, during which period they had admired the beauty of the human form with the greatest fervour. The basis of their sculpture was the natural form of man, but the endowment of that form with an idea had been the essential point. The Greeks first studied the reality before they attempted to imitate it. Art was the echo of reality—at first a slavish echo, but by degrees a self-conscious reproduction of that reality with a spirit of its own, the idea of the artist. It then passed from the stage of imitation into that of original creation. The first Greek sculptors, like those of Italy in the Middle Ages, had produced close imitations of Nature. Thus the works of Aristokles, Onatos, Kanchos, Pythagoras of Rhegium, Kalamis, and Ageladas, were analogous to those of Verocchio, Pollaiolo, Ghirlandajo, Fra Filippo, and even Perugino. Just, however, as in Italy these were succeeded by Leonardo da

Vinci, Michael Angelo, and Raphael, the early Greek sculptors were followed by Myron, Polykletes, and Phidias. Naturalism was the first step in art, but its climax was idealisation. In every human creature something beautiful was to be found. To generalise these individual elements of beauty in one form was the aim of the great masters. Supposing that a young artist saw a beautiful being, he would not only be struck by the beauty in detail, but would experience a feeling of delight in general. He would afterwards analyse that beauty, would recollect that the eyes would become dim, the cheeks hollow, and the mouth lose its freshness. A melancholy feeling would overcome him; a struggle between despair and hope would ensue at the thought that such forms should pass away—hope that he might be able to fix for ever in a lasting form the beautiful image he had seen. If in representing such a being the artist omitted all that was perishable, and reflected only that which was eternal, he would produce a real work of art. This did not mean that the artist was altogether to lose himself in mere generalisations, so as to give no individuality to his sculptures; but he had to transport his figures to those pure heights of ideal generalisation, in which pride, majesty, love, force, war, &c., might be recognised as general ideas in idealised types. It was in this that the Greeks had excelled. They raised their productions to ideal types, in which not only certain general forms, but also certain general characteristics of humanity were reproduced with real truthfulness. Thus in Zeus we saw not only the beauty of venerable old age, but recognised the highest wisdom and power. In looking at some of the sculptures before us (those of the Temple of Minerva at Athens prior to its destruction by Xerxes) we should see that they had the forms of Assyrian and Egyptian divinities, if we excepted the fact that the anatomy was much improved in some of the figures, though even in these there was still much stiffness in the positions of the hands and legs. The historical periods into which we might group Greek sculpture, to enable us more comprehensively to study its history, were the following:—First period, from the eighth century B.C. to the Persian wars (470 B.C.) Second period, from Kimon to the conclusion of the Peloponnesian war (470—400 B.C.) Third period, from the delivery of Athens to the death of Alexander the Great (400—323 B.C.) Fourth period, from the death of Alexander the Great to the conquest of Greece by the Romans (323—146 B.C.) Greek sculpture had taken its origin in Eastern art. This was proved by the Iliad of Homer. The descriptions of beautiful carriages, richly-adorned couches, stately thrones, and of weapons, shields, and helmets of exquisite workmanship found in that poem, almost led us to think we must be reading Indian or Assyrian works. There could be no doubt that before the introduction of sculpture, metalloteknic must have been developed to a great extent. Homer could never have given the minute description of the shield of Achilles had not some such work existed. From the seventh to the second century B.C. we had a progressive history of Greek sculpture before us, with dates, names of artists, and numerous examples. A consideration of these will form the subject of the next two lectures.

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BUILDING NEWS SKETCH BOOK.—LIX.

THE CHAIN GATE AND COMMON HALL, WELLS.

THE accompanying view of these interesting relics of Mediæval art is taken from the measured geometrical elevations and plans sketched on the spot by A. W. Pugin, and published by T. L. Walker, which, although an excellent and practical work, seems to want a perspective view of the buildings or a connected elevation, including that admirable little oriel window in the end elevation of the vicar's dwelling house, which, as restored by Pugin, with the additional mullion, is well worthy of notice.

The other parts of the structure have been added to and altered at different dates. The original hall was commenced in the fourteenth century. The thick mullioned window in the centre of the drawing is of much earlier date than the others; the large oriel window over the gateway to the close must have been inserted after the buildings were completed, the buttress being cut away to receive it.

There is a quaint irregularity and pungency about these time-honoured remains, which, apart from their antiquarian interest, have claims upon us in an artistic sense, which we should do well to study.

The effect of broken wall surface, of oddly placed buttress, or sudden recess, is often a refreshing source of pleasure, contrasting well with the nicely balanced symmetry of other portions.

The drawing is intended to be "architecturesque" rather than "picturesque." Fidelity and accuracy being really more important than chiaroscuro in such a case as this, even at the sacrifice of force and depth of expression.

W. H. Lockwood.

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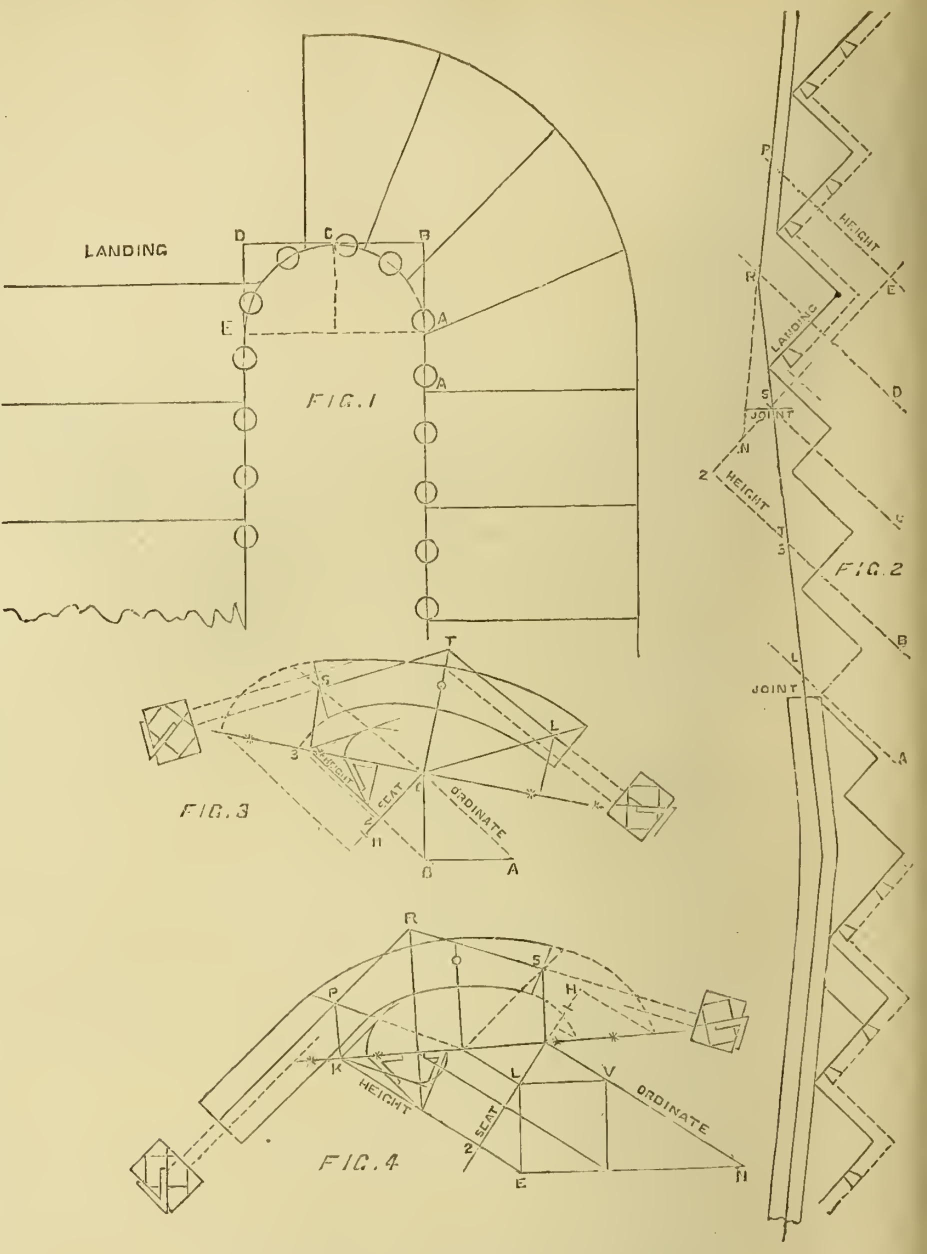

NEW ELEMENTS OF HAND-RAILING.—PLATE XXI.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 86.)

Plate 21.—Construction of Wreath for Stairs having Four Winders, Quarter Landing, and Square Steps.

FIG. 1 exhibits the ground plan. The centre line of rail enclosed by tangents A, B, C, D, E. These are unfolded at

Fig. 2. The letters along margin correspond with those on plan. Let underside of rail rest on corners of square steps. Set off half its thickness. Draw upper part to cut R. This is a fixed point, and stands over D on plan. Draw pitch over winders, say through L. This shows that the upper part of wreath forms its own ramp. Two moulds will be required. Find heights by drawing through joint S, cutting at E and 2, which gives E P as height for upper part, and 2 3 for half the height of lower part.

Mould for this is given at Fig. 3. Let A B C equal corresponding letters on plan. Join A C ordinate. Draw from B parallel with it. Make seat square with it. Let 2 3 the height, equal that on right having corresponding figures. Join 3 C extended. This is pitch and major axis.

Next find points of elliptic curves on pitch by making C H equal C B. This done, set off on each side of H half width of rail. Then square up to cut the pitch.

The drawing is now ready for the mould. The tangents L T and T S being equal, one bevel answers both joints. See that L T S agree with pitches on the right, where similar letters are shown.

Fig. 4 is the mould for upper part of wreath. Let square equal one of those on plan. Extend side E N. Let this equal E N, Fig. 2. Join N V ordinate. Draw from other three corners of square parallels with ordinate. Make the seat square with it. Let the height 2 K equal that of E P on right. Draw pitch from K, through intersection of seat and ordinate. Find elliptic curves on pitch by making L H equal L V. The dotted lines that are parallel with ordinate give the points. The drawing is now ready to lay board on for mould, it being struck with a string.

Tangents P, R, S must agree with the pitches on Fig 2 having similar letters.

Square sections show joints and application of bevels.

It will be observed that the square steps and winders at Fig. 2 stand in the same positions as those on tangent lines of plan.

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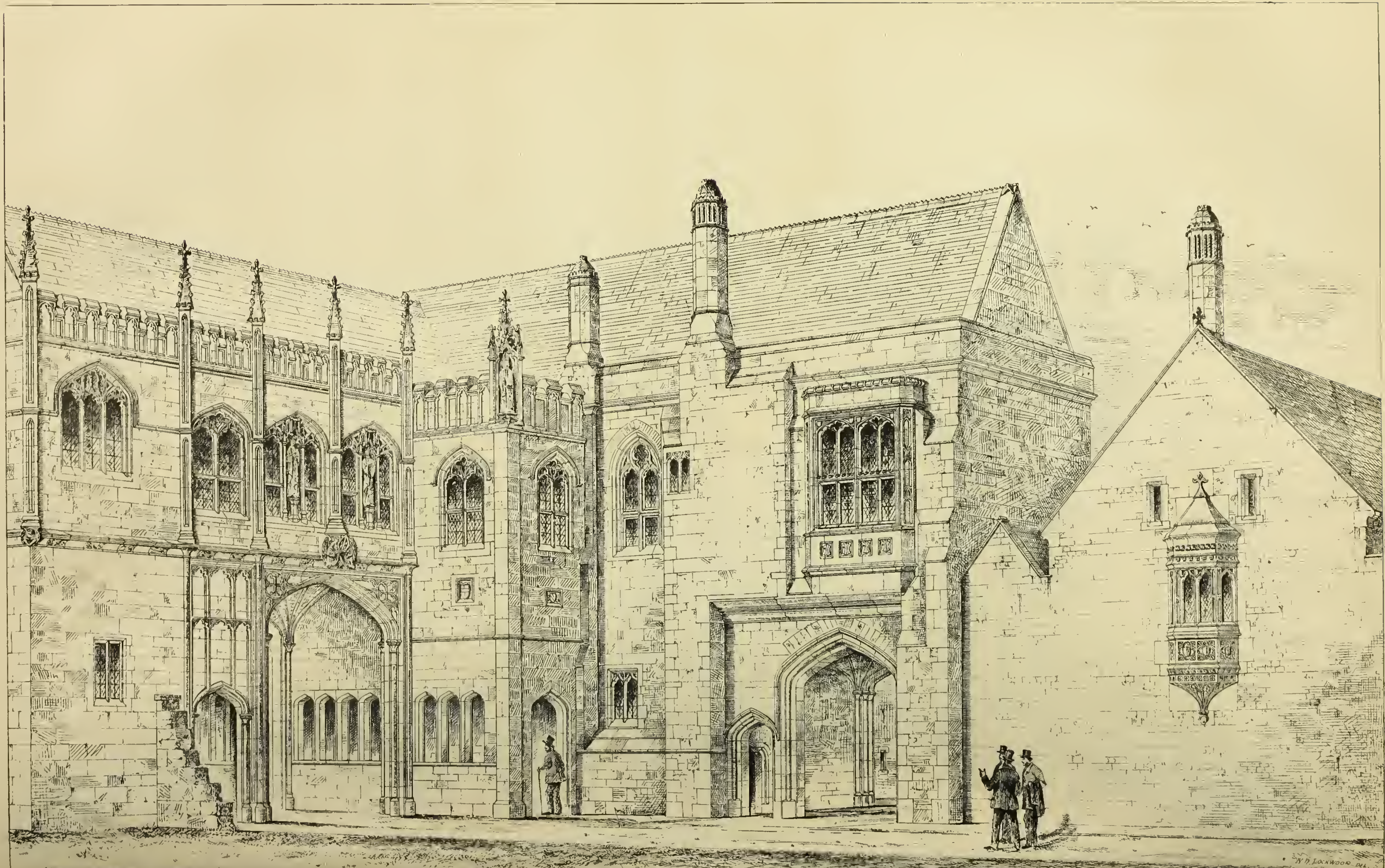
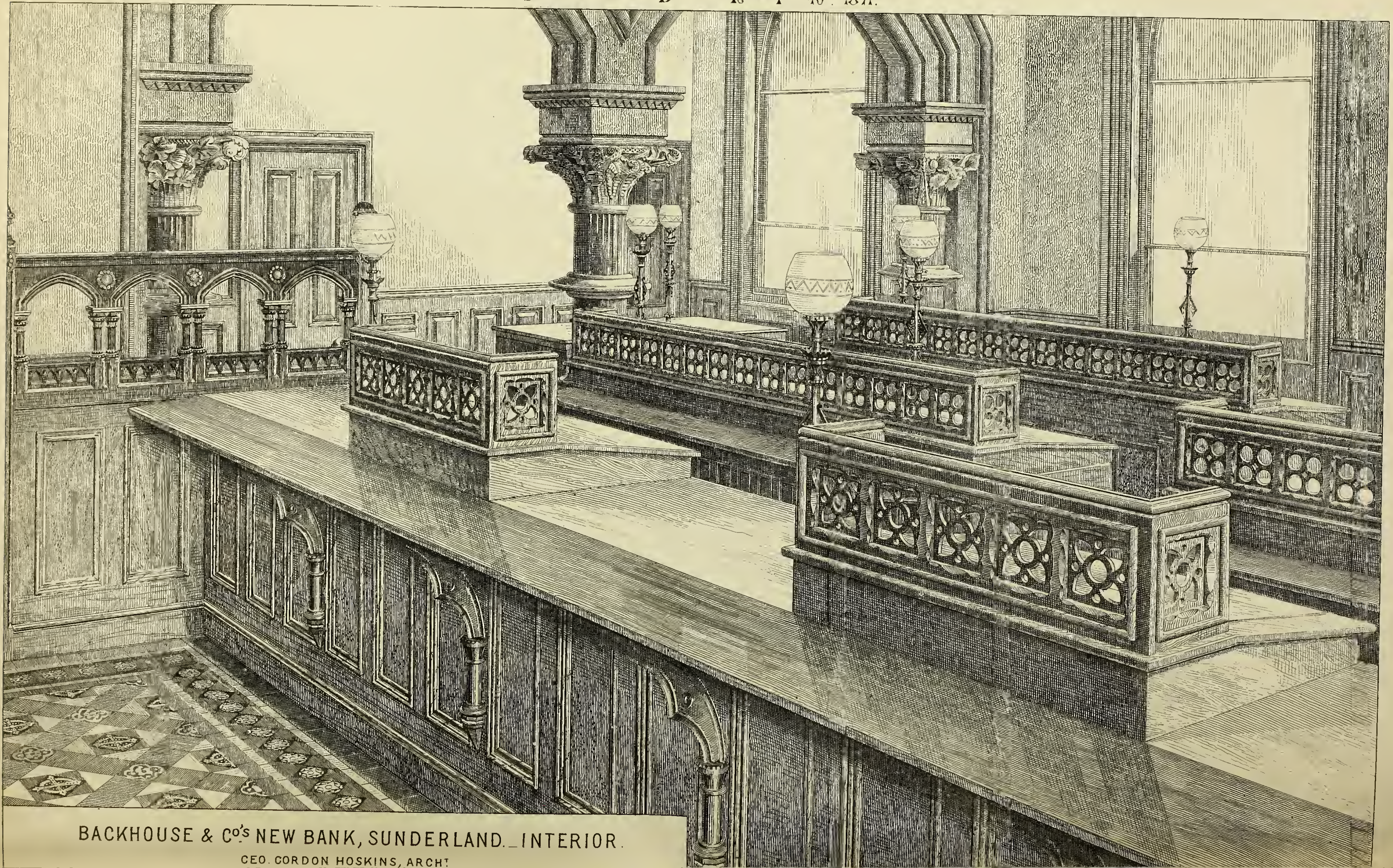
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.


W D LOCKWOOD DEL.

+Chain-Gate & Common Hall · Wells · Restored

Photo-Lithographed by Whiteman & Bass London



BACKHOUSE & Co's NEW BANK, SUNDERLAND._INTERIOR.

GEO. GORDON HOSKINS, ARCHT.

Furniture & Decoration.

DECORATIVE PROCESSES.

By "An Experienced Workman."

(*Continued from page* 92.)

IN our last we described the process of over-combing oak. A very excellent machine or roller has been invented by Mr. W. Jones, grainer to the trade, of 4, Walnut-street, Hulme, Manchester, of very simple construction, but which performs its work most admirably. Machines for graining ordinary woodwork are, as a rule, complete failures, and, like patent medicines, are guaranteed to do too much—and of course do not do it. Mr. Jones's invention differs from all others in the fact that it only professes to assist the grainer in such parts as may be accomplished by mechanical means, and this purpose it effects in the most complete and efficient manner possible. Its object and purpose is to dispense with the process of over-combing as before described; and this is accomplished by an exceedingly simple arrangement, which deposits the colour upon the work in short bits, in exact imitation of the pores or grain of oak, and, in fact, of any wood which has these pores as a distinctive feature. This invention consists of a wooden roller about ¾ of an inch in diameter, and of various sizes, from ½ an inch to 3in. in width; through the centre of this cylinder an iron core is fixed having projecting pins at each side, which fit into an iron handle formed by a half-circle of thick wire bent close together to form the handle, and opened out at the other end to clip the roller and fit upon the projecting pins, and upon which pins the spring of the wire is sufficient to keep the whole in its place. This is simply the framework of the roller. The roller is now clothed with circular discs of sheet-zinc, having notches cut in their edges at irregular distances; these discs are about 1¼in. in diameter, having a hole in the centre cut out to fit upon the wooden core or cylinder; this hole is made a trifle larger than the cylinder, in order that the discs may have a little play and so accommodate themselves to the slight inequalities of the surface of ordinary woodwork; this is a very nice arrangement, well wrought out, without which the tool would be comparatively useless. Another advantage consequent upon this arrangement is that the play given allows the discs to turn round independently of each other, and so the notches in the edges are constantly changing their relations towards each other, and thus variety is secured; this completes the roller. The method of using this tool is as follows:—The groundwork is prepared and figured in exactly the same manner as before described for the over-combing process, and when this is dry it is ready for the roller. The colour to be used on the roller must be mixed much thicker than the ordinary graining colour, and will require to be megilped either with wax or lime-water. A brush or feeder is required to supply the roller with colour as it revolves. This brush will require to be flat, something like a large hog-hair mottler; or a large sash-tool may be flattened so as to answer the purpose. The roller is held in the right hand, and the feeding brush in the left hand; this brush, containing the graining colour is then placed or held firmly upon the upper side of the roller, and inclining to the back part of the same in such a manner as to insure that every one of the notched edges of the zinc discs will touch the feeding brush as they revolve; the roller is then placed at the bottom of the panel or other work to be grained, and is then pushed or made to travel upwards or from the operator, and as it moves along it leaves behind it exact imitations of the short bits of grain or pores as seen in the real wood. The roller requires to be used lightly and with little pressure, only just sufficient to keep the roller steady. When the work is rolled the grain will require to be slightly softened with a duster or stiff softener, care being taken to do this always lengthways of the grain, and not across it. The grain may then be broken up and the lights softened, as in the over-combing process.

These rollers are very compact, easy to use, never get out of repair, and there is scarcely any limit to the time they will last in wear; and we have no hesitation in saying that they are the only invention which may be considered of benefit to the grainer, as by their aid he may get over more work in one hour than can be done with the comb in ten hours; and thus time is saved and cost reduced. The pores or porous grain seen in baywood, mahogany, teakwood, walnut, and rosewood may be admirably imitated with these rollers; but all soft woods, which, as a rule, are grained in distemper, will require to be once varnished previous to being rolled, as of course the grain will wipe off those places on which it is not required much better than upon the distemper unvarnished.

The roller principle seems to be "the idea" in all inventions for graining. A patent was taken out some twenty years ago by Kershaw & Bellamy, for imitating the grain of various woods by means of a roller and strips of leather cut to the required patterns. The leather of which these are made is thick hide, prepared for the purpose in a certain manner. On one side of these the pattern is sketched, and then the ground is cut away to a certain depth, just as a block cutter would do for printing. In some cases the strip of leather is made fast to the roller, and only just covers it; in other cases the leather will be three or four times the circumference of the roller, and of course these are only secured at one end. This roller is simply a metal cylinder with a centre pin or axle, upon which a handle is fixed; they are made of all sizes and widths, according to the wood to be represented. The *modus operandi* is as follows:—The graining colour, which is mixed with weak beer (*i. e.*, distemper colour), is brushed over the work to be grained, and, while it is wet, the roller, which has previously been damped with a wet chamois leather, is passed over it, and as the roller passes along it takes up the colour in patches of the exact shape of the pattern on the roller used. This may then be softened with the badger's-hair softener, and over-grained. It will be evident that this method of machine graining can have but a limited application on woodwork, inasmuch as however much work may be done with such a machine, each part will be merely a repetition of the pattern upon the roller, thus creating a sameness and monotony of patterns utterly wearisome and devoid of contrast, and consequently of beauty; for although the pattern of one of these rollers may be in itself a faithful copy of some particular piece of beautiful wood, yet the endless repetition of the same produces satiety and positive ugliness, for it is only by an intelligent use of the comparatively plain and the richly marked or figured, that harmony, repose, and beauty, are attained.

The mottle of satinwood, mahogany, Hungarian ash, and birch is very fairly imitated by these rollers, and also the beautiful feathers or curls in Spanish mahogany and satinwood. The mottle of these woods has very little variety; that is to say that the mottle of mahogany and satinwood is, as a rule, so much alike, not as two separate woods alone, but of different pieces of the same wood and tree, that one or two patterns suffice for all; and so this class of woods is peculiarly suitable for adaptation to these machines. But here we come upon a fatal difficulty in connection with this system. For instance, we are about to grain an ordinary door. The colour is rubbed in and the roller is applied at the bottom of the panel; now, these rollers, being five or six inches in diameter, cannot by any possibility touch the bottom of the panel nor the top, in consequence of the moulding on the panel being sunk, so that there will always be a certain space of one or two inches, as the case may be, which must be grained by hand, and pieced up to the machine work. Now this can only be done by a thoroughly skilled workman, and if it is not well done there is a decided botch at top and bottom of the panel; and if this is difficult for a highly-skilled workman to accomplish, how much more difficult for a novice to perform! Master painters in out-of-the-way country places see these machines and think they have nothing to do but set the machine going, and beautiful graining is at once produced. We need scarcely say this is a vain hope, resulting in a miserable failure and waste of time and money. Another objection to this method is the fact that, except the greatest care is taken of the rollers (and what a difficult matter that is!) the leather becomes dry, cracked, and shrivelled up, and so they are useless. It will also be evident to any one who is thoroughly acquainted with the art of graining that these machines occupy so much time in the preparation for work, and entail so much extra labour to piece them out and fill up all that they of necessity leave undone, that a good grainer (and it is only those men who can use them) will not be bothered with them, and will get over three times as much work without them as with them, putting out of the question the fact that the work is better and more pleasing done by hand, having more variety and more character than machine work can possibly have. Several attempts have been made, and even some of them patented, to grain oak by means of similar rollers, and even the choicest of marbles are professed to be done by some machine, but with what success we must perforce allow the unfortunate purchaser himself to find out. One would-be benefactor of his species has been foolish enough to patent a system of imitating oak by means of stencil plates, and wiping the figure out through the interstices cut in them. He then over-combs with vulcanised india-rubber rollers, a plan of working exceedingly dirty and inefficient, having all the defects of the previous systems without any corresponding advantages. Personally, we object *in toto* to the use of these machines, first as being in themselves a delusion and a sham, leading the inexperienced workman into a wrong path, which will and can only produce failure and disappointment and bad work. We still more strongly object to their use on the score of the false teaching such methods inculcate, tending to the destruction of personal effort for improvement, making the student content with what must at last result in a contemptible mediocrity. To us they are merely a miserable attempt to substitute methods of doing what can only be done well by persevering effort and close application and study, for it is quite certain that the student who begins his studies by using the machine will never arrive at any degree of proficiency, but will remain a bungler all his life. The workman who expects to produce good work by their aid will be miserably disappointed; for it is a fact that there is in graining, as in a much higher art, an individuality and peculiarity of style inseparable from each man's work—that is to say, if he is a first-class workman—and it is this character which gives so great a charm to original works of any description. On the other hand, there are plenty of men who are mere copyists, men who, like the parrot, can only repeat certain set forms, and are totally without originality or invention; to such men all systems and methods are alike—they jog on in the one groove all their lives, without talent or ambition to slip out of the beaten track. These are the class of men who patronise these machines, but certainly without benefit to themselves or anybody else.

We have now but to notice briefly the transfer oak process. This process is an adaptation of the process of transferring designs from copper-plates to the biscuit of china and earthenware, as practised in the potteries

But in this process, instead of printing from the copper-plate, a slab or board of real oak is used for that purpose, as thus: A suitable piece or board of oak is prepared in a particular manner, so as to clear out the soft fibre from out the grain or pores. This process at the same time hardens the wood. The wood being now ready, the printing colour is laid upon it and spread evenly. A scraper is then passed over the board, and cleans off all superfluous colour, just as if it were a copper-plate, only in the potteries the pallet knife is used. A particular kind of transfer paper is then laid upon the board, and the whole is passed under padded rollers, and when the paper is taken off, the whole of the pattern of the oak board is printed upon it. This paper may then be cut up into any sizes as may be required, and the grained side placed upon the work to be grained; it is then well rubbed, and after it has stood some time the paper may be washed away with water and a sponge, leaving the whole of the figure and grain of the oak upon the painted wood. By this process we transfer a facsimile of the wood to the painted surface, and if the colour of the ground and the graining colour are properly managed, the work cannot be distinguished from the real wood. The process of printing from the wood was first introduced and patented in France and the United Kingdom by a French firm, and applied to wall papers. They were first introduced into this country some nine or ten years ago. Many attempts have been made by our paper-hanging manufacturers to imitate this manufacture by other means, but none have succeeded so well as Messrs. Heywood, Higginbotam & Co., of Hyde-road, Manchester, who turn out some oaks we prefer to the wood-printed goods. The patent for the transferring from the wood on to the paint work was taken out by a Mr. Dean, who is engaged in the earthenware manufacture, to whom, after seeing the French process, the idea of transfer would be quite natural and easy to carry out. The process is good and thoroughly effective, but the great cost involved must prevent its being used, except for special jobs, and we know of no other wood but oak for which this process is available.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute on Monday evening last, Mr. Edward I'Anson, Vice-President, occupied the chair. The minutes of the previous meeting having been read and confirmed, Mr. Robert Walker, of King's Arms Yard, Moorgate-street, was elected an Associate.

Mr. Hebb, Associate, said he should like to call the attention of the Institute to a point of professional practice. Some time ago the Institute issued a memorandum with regard to professional charges, which was supposed to regulate the practice of architects in connection with the Institute; this was as far back as 1862. The resolutions contained in the document referred to were numerous, and embraced nearly all the varieties of practice with which an architect was likely to meet. The point to which he wished to direct the attention of the meeting was the article regarding the remuneration to be paid to an architect for his services in his professional capacity. In the statement of professional practice referred to, this remuneration was fixed at 5 per cent. on the total cost of the works executed; there were, under special circumstances, however, exceptions to this rule, the architect being entitled in some cases to 10 per cent. on the outlay, while in other instances he was to receive less than 5 per cent. At any rate, it seemed to him to have been the intention of the Institute that the minimum charge should be, as a rule, 5 per cent. He would therefore ask whether the attention of the Council had been drawn to the "conditions" which had been issued recently by the Governors of Bridewell and Bethlehem Hospitals, in which their architect's commission was fixed at 2½ per cent. This, it was true, was in addition to a salary. Were the rules which had been framed and issued by the Institute supposed to be binding upon all the members, or were they to be regarded as merely in the light of "recommendations" which the Council desired might be conformed to as much as possible? Any departure from such rules (supposing them to be binding) by one or two members must necessarily be to the damage of the rest of the members, and of the profession at large. But if they were merely "recommendations," they must be looked upon in another light than rules which should govern the conduct of the whole of the members of the Institute. If they were rules to be conformed to by all the members, were they still binding, or were they abrogated by anything which had taken place since 1862?

Professor Kerr thought that, on that occasion, when the Institute had met to hear a paper read, it was out of order for Mr. Hebb to put such a question, interrupting, as it did, the usual course of buisness.

Mr. Seddon, hon. sec., said that a similar question had been answered the other day. The clauses of the document referred to by Mr. Hebb were not considered to be *rules*, but merely recommendations which it was desirable that every member of the Institue should adopt.

Mr. Nash, Fellow, did not concur with what Professor Kerr had said, and thought that Mr. Hebb's question was a very reasonable and proper one to ask; and if such a question could not be asked at an ordinary meeting, how or when was it possible for a member of the Institute to direct attention to any subject which he considered to be of importance? The question brought forward by Mr. Hebb was very important, as just now it was of the utmost consequence to have a clear understanding on all points of professional practice. He thought that it might not be altogether amiss if the Council were to reconsider and revise the document referred to, which, nevertheless, he considered a most excellent one. The Bridewell Hospital "conditions," however, did not bear upon the question at all, for the architect to the Governors received a salary, and therefore could not expect to receive 5 per cent. as well.

Mr. Beckett Denison, Q.C., then gave a lecture "On The Mathematical Theory of Dome Construction." In the discussion which followed, Messrs. Penrose, Wyatt Papworth, Nash, and Prof. Kerr took part, the general opinion being that Mr. Denison had laid down very valuable rules for mastering the many difficulties and perplexities of dome construction, although Mr. Nash inclined to the opinion that the "practical sagacity of the architect" ought to be more than sufficient to grapple successfully with such difficulties.

Mr. Denison, in reply, while admitting that "practical sagacity" went a long way with architects, as with other people, pointed out that in previous discussions on dome construction the members had been unable to come to any definite conclusions on the subject, and it was only by mathematics that such conclusions could be arrived at.

The thanks of the meeting were formally tendered to Mr. Denison for his paper, and the meeting adjourned.

ON LONDON AS A FIELD FOR ARCHITECTURAL STUDY.*

(*Continued from page 96.*)

The fire of London is the great event in the architectural history of our metropolis. The year 1666 lands us, in our study of London, at the commencement of what is the fullest period, the modern epoch, in which we ourselves are living and working. Of course the great change in learning and in art which distinguished the sixteenth century had, ere this date, swept over Great Britain as it did over the rest of Europe, and in this country some part at least of its action was intensified by its being complicated first with a religious and then with a political revolution. Had it not been for the Fire of London many more traces of this gradual change, or of the times which preceded it, would have survived than actually exist, but the fire made a disastrously clean sweep of much that we should have valued now, and left a vast field for Wren's works, which, with those of his successors, constitute a definite London school of architecture. Before the Fire we had Renaissance architects at work here, and the greatest of them, Inigo Jones, has left behind him in the banquetting hall, Whitehall, an excellent specimen of the art of Italy, imported, with but little variation in its details, into this country. This building, like all Jones's work, is well worth study, and though a fragment of a large design, it is very complete in itself, and very full of characteristic points. The super-position of orders commonly to be found in the works of Vignola, and the completely decorative use made of the orders, are characteristic of Italian Renaissance building; so is the very secular quality of the whole design—a quality which you will see it was right it should possess when you recollect that this building was a banquetting hall, and not built as a chapel at all. I suspect, however, notwithstanding his fine simple church in Covent-Garden, that Renaissance art would not have lent itself well to ecclesiastical purposes in Jones's hands any more than it did in the hands of most of his Italian and French contemporaries; and it was reserved for Wren, a man of perhaps greater genius as well as grander opportunities, to mould a very inflexible style—and one associated far more with the recollections of pagan rites or with a pompous ritual than with simplicity in the celebration of Christian worship—to the purposes of the English reformed Church. In Wren we possess an architect of the first rank, distinguished for sound judgment and skill, versatile talents, and real genius. His mind was strongly imbued with the spirit of Gothic, though he did not understand its letter. Such of his works as profess to be Gothic, like the west towers at Westminster, are very defective; but those where he employed his own architecture, but in a Gothic manner, are most delightful. The steeples of the City churches are excellent examples of what I mean, and the best of them—such, for example, as those of Bow Church (Cheapside), S. Bride's, and S. Clement Danes—are excellently well worthy of study. His best churches are worth attention as interiors, on account both of their beauty and their convenience. The most famous are S. Stephen's, Walbrook (noted for good architectural treatment), and S. James's, Piccadilly (for economical arrangement and construction); but almost (if not quite) all of them, are convenient, effective, and excellent for speaking and hearing in. His great work, S. Paul's, I need not, I hope, recommend to you as in its style a *chef d'œuvre;* but I may perhaps be allowed to say a word as to why any great building of the style in which Wren worked ought to be studied by you. There are, I know, some architects and some students who say they only intend to work in a Mediæval style; that the best architects of the Middle Ages knew nothing of the Classical work which had gone before them, and did well without it; and that they hope, by retaining an exclusively Gothic bent of mind, and keeping themselves as free as possible from Classic, to do as well as they. Put boldly, this means that they will emulate not merely the skill but the seclusion of the Mediæval architect. Now I take it this is founded on the radically-defective basis that whereas the architect of the Middle Ages was thoroughly in harmony with his own time, our supposed exclusive Mediævalist would be thoroughly out of harmony with ours. To know nothing of the work of the Romans was the common condition of the country, and the architect shared it. To know something of the work of all past times is—unfortunately, perhaps, but unquestionably—the lot of the nineteenth century, and the architect who would keep abreast of his own day must share that knowledge. But more than this, the works of the Renaissance architects usher in the modern manner, which has never yet been rooted out or supplanted, and which, instead of being combated and contradicted at every step, ought to be understood and kept in mind. It is no more possible to avoid the modern element in the taste, the knowledge, and the requirements of the public, or the modern improvements in building materials, than it is to ignore the nineteenth century in dress, literature, amusements, politics, or any other element of social life. It appears to me, then, that in urging you to examine Wren's works as forming the starting point of modern architecture in London, I am naming a very strong element in the claim which they make upon your attention. Wren's cathedral belongs, however, to the highest category of works which are appealed to as the culminating points in the history of architectural styles, which are matters of national pride, and which are the landmarks of great cities. Far inferior in bulk and in richness to S. Peter's at Rome, and perhaps not so refined in detail, S. Paul's has unquestionably the finer exterior; and though its interior has been surpassed by several similar works, it is yet among the very finest. When you have become familiar with S. Paul's, I would have you visit the model of Wren's original design (which lies, or did lie, in a half-repaired condition at South Kensington), and try to realize from it what the intentions of its gifted author had been as to interior effect. Of Wren's powers as an architect of secular buildings, Greenwich Hospital (a building easily within reach of London) is a noble example, and I recommend this building to your careful study. His other secular works near London are several of them less noteworthy, but I cannot forbear naming Chelsea Hospital as a plain work, full of good sense, simplicity, breadth, and dignity. Wren's followers did not equal their master, and I am not inclined to urge your devoting much attention to the works of Gibbs and Hawksmoor, though S. Martin's Church, by the first-named architect, is a building of much merit. A greater architect than either was Vanhrugh, who, I think, has not left any building behind in London.

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* Read before the Architectural Association on Friday, the 27th ult., by Mr. T. Roger Smith.

The latter part of the seventeenth century was distinguished by features worth your notice, and which are to be found in private dwelling-houses. Most of the gabled houses, with overhanging stories and projecting bay and oriel windows — which belonged to the sixteenth century, or, at least, were in the manner of it—have disappeared, or we should, at an earlier stage, have had to notice them; but the style of house which succeeded them is still to be found in the outskirts of London, and in decayed portions of the metropolis itself—large square houses of red brick, often beautifully cut and rubbed; rich overhanging cornices, and high roofs; excellent wrought-iron gates, and finely-carved wood brackets adorn their exteriors, which often also are enriched internally by good chimney-pieces, fine vigorous woodwork in doors, dados, shutters, &c.; and which always boast a roomy hall and staircase, with excellent balustrades. The most beautiful bits of detail in S. Paul's are Gibbons's wood carving, and forged iron grilles of which the smith's name is unknown to me. In many parts of London you may find fragments of wood-carving and wrought-iron not far inferior to those at S. Paul's—certainly quite in the manner of it, and well worthy of being sketched. At Hampstead, Highgate, Wandsworth, and other suburbs, these houses abound; and in London (in such places as Queen's-square, Westminster, and Lincoln's Inn Fields) they still survive. Coming down again, we have the polished and refined work of Sir William Chambers, who in Somerset House produced a building well deserving your study; and after him the buildings (private houses mostly) of the Adams. These houses, weak and poor in other respects, are remarkable for the beauty of their plaster enrichments, and in such places as the Adelphi-terrace you may find houses with ceilings that can hardly be surpassed. Sir John Soane is the next architect of note. His best work, the Bank of England, is one of the buildings which, I think, deserve to be pointed out to your notice. It is entirely destitute of external windows, and lower than all the buildings round it, and yet, though deprived of the two means by which alone an architect generally hopes to produce a commanding effect (height and features), Soane has here produced a building which is pleasing in effect and full of very beautiful detail, and which holds its own among the lofty piles in its neighbourhood. I now come to a period which I look upon with great regret, and should almost have been glad to have avoided mentioning had I seen how to pass it by. It is the Greek, the Anglo-Greek, time I mean, which, commencing at the return of those enterprising travellers Stuart and Revett from Greece, has continued almost to our own day. I have already ventured to give my own opinion of Greek architecture as attempted to be introduced into this country. The Greek revival was a gallant effort nobly made, and deserved success, but it was, I think, impossible for an architecture originated and matured under such very different climatic circumstances to be imported with satisfactory results. The Greek revival was, however, popular for a time, and several opportunities of executing what must be considered Greek buildings were enjoyed in London by the architects of the movement; indeed, they were in this respect more fortunate than their successors in the far more general and more popular Gothic revival have hitherto been. At the outside the difficulty had to be met that most important buildings required in London were of a description of which no examples existed in Greece, and that the amount of external light required to be admitted and of shadow permissible was altogether different. In such structures as the Post-office, the British Museum, London University College, and the National Gallery, we have the results of these conditions. All of them have a forbidding aspect, because what is welcome shade in Greece is cheerless gloom in London; all of them have Greek details, but, in the mass, breathe more or less of the spirit of Roman or Italian composition, and, what is perhaps of most importance, no one of them is enriched with that profusion of good sculpture which is wanted, if I mistake not, in a Greek building in London at least as much as in Greece. For correctness of detail I believe S. Pancras Church in the Euston-road may be safely consulted by you; and for effectiveness I am inclined (though disagreeing, I believe, with general opinion) to recommend the portico to the Euston Station, designed by the late Mr. Hardwick. The Greek revival furnished us with at least two very distinguished architects, Cockerell and Elmes. Of Elmes's work I am not aware whether any specimen exists in London. He died early, leaving his great building, St. George's Hall, Liverpool, incomplete, but having, in designing that structure, gone further in the direction of making Greek architecture available for English wants than any other artist. That building, whenever any of you can visit it, will be sufficient evidence to you that Elmes's death was a great loss to our art. Of Professor Cockerell some here present retain, I doubt not, that affectionate and enthusiastic kind of recollection by which the memory of so accomplished and so kindly a professor is cherished among those who attended his courses. Some of his works in London deserve your especial attention, if you are minded to see what Greek art can do here. His insurance office at the corner of Agar-street is a good specimen; so was the London and Westminster Bank before it was mutilated (I was about to say), at any rate ruined, by the façade being prolonged, and that in the curved line. A very instructive example of Cockerell's work is the building which I think he himself regarded as his best work in London, and which, though not Greek, has so very large an infusion of Greek refinement in it that we may well be justified in taking it as a kind of transitional example between Greek and Italian Renaissance. I refer to the Sun Fire Office, and I do not think that any amount of time or trouble which you may devote to that building will be thrown away. That incongruity between English wants and ancient models still existed, but not in the same degree, when men began to turn to Roman examples; but what was much more to the purpose, the process of adapting the latter to modern requirements, as far as adaptation was necessary, had been already gone through by a race with far higher natural artistic endowments and far better training than our own; and Florence, Genoa, Rome, and Venice, with a host of other Italian cities and towns, were found to teem with examples of modern architecture which had a thoroughly Classical character, and therefore harmonised with the tone of mind that our all but exclusive study of the poets and prose writings of Greece and Rome had rendered very universal among educated Englishmen a generation back; while it had already been shaped to our uses by having been employed for all the purposes which modern European civilisation desires that buildings shall serve. In Italian Renaissance, then, we have a style, or more properly a group of allied styles, introduced by Inigo Jones and Wren, and which never wholly died out, but which was reverted to eagerly in England at the close of the Anglo-Greek period. This style has a strong hold upon London; a very considerable number of good buildings have been erected in it, unfortunately along with many bad ones, and if I mistake not it will continue to be popular for a long time yet. The best examples in London of Anglo-Italian Renaissance yield very little, if at all, to their Italian prototypes, and if you will select them carefully, and will keep to the good ones, you may obtain a very good knowledge of the style without leaving London. I know that the difficulty is great for young students, and even for those who are somewhat advanced (if untravelled), to know what is good, and after some consideration I have thought it better to point out to you as samples a few *men* whose works you may safely trust, and a few buildings which you may well study, than to attempt to analyse a large number of buildings. But you must not suppose that if I name only three or four architects, that their works and the other buildings I happen to mention are the only ones I consider really good. Such selections are necessarily made as specimens only, and inevitably leave many good works by good men quite unnoticed. The late Sir Charles Barry was *facile princeps* among those who have worked in the Renaissance styles in our own time. His best works for our purpose are the Reform Club in Pall Mall, and the Travellers' Club, which adjoins it; and a neighbouring building of great beauty, though to my taste a less perfect model—Bridgwater House. Barry's Treasury buildings in Whitehall may be added to this list, and nothing better in Renaissance architecture in the shape of studied composition and refined detail can possibly be put before you than these four exteriors. The range of Pall Mall clubhouses will yield one or two other fine examples —the Carlton for instance (I believe by Mr. Smirke), which is none the worse for our purpose that it adheres very closely to one of Sansovini's designs at Venice; but while commending these to your notice I cannot but dwell upon the higher value of Barry's works as objects of study. Sir James Pennethorne's Italian works may be named as worth careful attention. I would especially refer to his London University, in Burlington Gardens, and his Museum of Practical Geology. His enlargement of Somerset House, though a very creditable work, does not claim attention in exactly the same way, as it is only the carrying out of an existing design. Among the mansions of the West End there are here and there examples of the style we are considering, which rise well above the general dead level of sordid stucco. As good an instance as any is Mr. Holford's house, in Park-lane, built by Mr. Vulliamy, I believe, and which is a very nice example of an Italian villa or small palazzo transplanted hither. The Marquis of Westminster's incomplete house near it is another good example.

East of Temple Bar we may now and then find, amid a mass of the most regretable lost opportunities, a good example of Renaissance, and there is sufficient in quantity to have enabled London to vie with Venice had our architects only been men half as fit for their opportunities as Wren was for his. Mr. I'Anson's Bible Society's House may be named as an honourable exception to the generally disgraceful level of city work; so may some others of his street buildings. Goldsmiths' Hall, by the late Mr. Hardwick, deserves honourable mention as a vigorous and even noble specimen of architecture —perhaps a trifle heavy, but very palatial, and far in advance of most of the halls of the City companies, among which some recent specimens are no improvement on their predecessors. Mr. Gibson's National and Provincial Bank may be named as a good example of the utmost decorative enrichment that can be lavished upon a building. It is a decided success, and will furnish a fund of good detail. Professor Kerr's Insurance Office at the corner of Eastcheap is another successful and well-wrought-out city building of Italian architecture. This list might, with some pains, be extended considerably, but it is hard to keep one's patience when one reflects how easily a long list of costly London buildings which I could only name, did I mention them to you, as *examples of what to avoid* carried out in marble, granite, and freestone, might be made out, and how needless it is that it should be so. London tradesmen and merchants will pay for stone and granite, girders and glass; when will they learn to value genius and taste? When shall we ourselves learn to do our duty to ourselves and our profession? A florid example of the style we are referring to has been recently completed in Sir Digby Wyatt's India Office. I am now referring to the interior, that portion of it which is the work of an architect who professes to practice the Renaissance style. The quadrangle and staircases are well worth attention, as showing the results of a strong love for ornament highly cultivated and freely indulged, though more decorated than is usually either practicable or desirable. The Renaissance style, as you may be aware, penetrated France earlier than or at the same time as England, and certain developments of it are due rather to French than to Italian treatment. Of the best French period, as far as ornament goes—the time of Francis I.—we have, I think, no imitations in London, and yet I can hardly imagine a style better suited to the display of elegant richness in a small frontage than that. The Crystal Palace Renaissance Court contains some fragments of it, and perhaps some of them may stimulate you to seek more familiar acquaintance with it in the Valley of the Loire. The high roofs, tall pilaster-like lines of rustics, and some other features which have been common of late years, are, however, traceable to French influence, but in part of a later period; and such buildings as the Cannon-street and Charing-cross Hotels, by Mr. E. M. Barry, and the large masses of buildings recently erected on the Marquis of Westminster's estate by Mr. Cundy (near the Victoria Station) must be accepted as the best specimens we have of this manner. They are none of them, however, such good specimens of French Renaissance as Sir C. Barry's works were of Italian, being deficient in the refinement and finish of the works of French architects. A house recently built in Park-lane may be, perhaps, recommended to you as a more perfect specimen of this manner, of which there are some other fair examples in the West End of London, such as the Great Western Hotel.

(*To be continued.*)

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S. ALBAN'S CHURCH, TATTENHALL, CHESHIRE.

THIS church, consecrated in November last, has with the exception of tower and aisle walls been entirely rebuilt. The space formerly occupied by the old chancel is now included in the nave, and the south aisle has been extended one bay; the original window at east end of same having been re-inserted. A new chancel, organ chamber, and vestry have been added.

The tower is a square embattled structure of stone, built in the reign of Henry VII., and contains a peal of five bells. From the level of the gutter project short grotesque gurgoyles; and two empty niches, probably once containing figures of the Virgin Mary and S. Alban, occupy prominent positions above the doorway. The initials R. H. and M. R. D. on shields below the niches have given rise to antiquarian controversies. Inside, the tower is open to the church, but a screen has been fixed under the arch, to conceal the bellringers from the view of the congregation. The tower window is filled with stained glass by Messrs. Lavers, Barraud, & Westlake. The window also at west end of south aisle is filled with stained glass by Messrs. Clayton & Bell.

The nave is divided from aisles by four arches springing from piers with moulded caps. The roof is supported by three principals, which, with the rafters, are of varnished pitch pine. The nave roof has been raised about 10ft. from those of the aisles, and the intermediate walls have been pierced with clerestory windows. The windows of aisles have been thoroughly repaired, and new lead lights inserted. The old box pews have been replaced by open ones, which will accommodate about 500 persons. The whole of the interior walls are of stone. The font and pulpit of stone are special gifts.

The new chancel is well raised, and paved in the centre with encaustic tiles. Preparations have been made for the erection of a reredos. The east window, by Hardman, has been presented as a memorial to the late Rector, and illustrates the Crucifixion and scenes in connection therewith. In a window in the south side of chancel, the stained glass which was formerly in the old east window is replaced. It contains a representation of S. Alban, and the arms of Lord Dudley, who was executed for high treason in the reign of Henry VII., and who held the manor at that time.

The new south porch was the gift of a parishioner, and is framed with strong oak timbers, the beams and verge-boards being carved. The windows have painted glass in them.

The whole of the roofs are covered with green Langdale slates.

The works have been well carried out, at a cost of £3,500, under the direction of Mr. John Douglas, architect, of Chester, by Mr. George Woollam, builder, of Tattenhall.

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EXPERIMENTS ON THE OXIDATION OF IRON.*

SOME two years since, Sir Charles Fox inquired of me if I could give him the exact composition of iron rust, viz., the oxidation found on the surface of metallic iron. I replied that it was admitted by all chemists to be the hydrate of the sesquioxide of iron, containing a trace of ammonia; to this he answered, that he had read several books on the subject in which the statements referring to it differed, and from recent observations he had made, he doubted the correctness of the acknowledged composition of iron rust. He further stated that if he took a bar of rusted wrought iron, and put it in violent vibrations, by applying at one end the fall of a hammer, scales would be separated which did not appear to him to be the substance I had described.

This conversation induced me to commence a series of experiments which I shall now detail. I first carefully analysed some specimens of iron rust, which were procured as free as possible from any source of contamination. Thus one of these samples was supplied to me by Sir Charles Fox, as taken from the outside of Conway Bridge, the other secured by myself at Llangollen, North Wales. These specimens gave the following results when submitted to analysis :—

	Conway Bridge.	Llangollen.
Sesquioxide of iron	93·094	92·900
Protoxide of iron	5·810	6·177
Carbonate of iron	0 900	0 617
Silica	0·196	0·121
Ammonia	Trace.	Trace.
Carbonate of lime		0·295

These results clearly show the correctness of Sir Charles Fox's foresight, that the composition of the rust of iron is far more complicated than is stated in our text books. Therefore the question may be asked, Is the oxidation of iron due to the direct action of the oxygen of the atmosphere, or to the decomposition of its aqueous vapour; or does the very small quantity of carbonic acid which it contains determine or intensify the oxidation of metallic iron? To reply to it I have made a long series of experiments, extending over two years, and which I hope will throw some light on this very important question.

Perfectly cleaned blades of steel and iron, having a gutta-percha mass at one end, were introduced in tubes which were placed over a mercury trough, and by a current of pure oxygen conducted to the top of the experimental tube, the atmosphere was displaced, and it was then easy to introduce in these tubes traces of moisture, carbonic acid, and ammonia.

After a period of four months the blades of iron so exposed gave the following results :—

Dry oxygen	No oxidation.
Damp ,,	In three experiments only one blade slightly oxidised.
Dry carbonic acid	No oxidation.
Damp ,,	Slight appearance of a white precipitate of the iron, found to be carbonate of iron. Two only out of six experiments did not give these results.
Dry carbonic acid and oxygen	No oxidation.
Damp oxygen and carbonic acid	Oxidation most rapid, a few hours being sufficient. The blade assumed a dark green colour, which then turned brown ochre.
Dry oxygen and ammonia	No oxidation.
Damp ,, ,,	No oxidation.

The above results prove that under the conditions described, pure and dry oxygen does not determine the oxidation of iron, that moist oxygen has only feeble action; dry or moist pure carbonic acid has no action, but that moist oxygen containing traces of carbonic acid acts most rapidly on iron, giving rise to protoxide of iron, then to carbonate of the same oxide, and last to a mixture of saline oxide and hydrate of the sesquioxide of iron.

These facts tend to show that carbonic acid is the agent which determines the oxidation of iron, and justifies me in assuming that it is the presence of carbonic acid in the atmosphere, and not its oxygen or its aqueous vapour, which determines the oxidation of iron in common air. Although this statement may be objected to at first sight, on the ground of the small amount of carbonic acid gas existing in the atmosphere, still we must bear in mind that a piece of iron, when exposed to atmospheric influences, comes in contact with large quantities of carbonic acid during 24 hours.

These results appeared to me so interesting that I decided to institute several series of experiments.

When perfectly clean blades of the best quality of commercial iron are placed in ordinary Manchester water they rust with great facility, but if the water is previously well boiled and deprived of oxygen and carbonic acid, they will not rust for several weeks. Again, if a blade of the same metal is half immersed in a bottle containing equal volumes of pure distilled water and oxygen, that portion dipping in the water becomes rapidly covered with the hydrate of the peroxide of iron, whilst the upper part of the blade remains for weeks unoxidized; but if a blade be placed in a mixture of carbonic acid and oxygen, a very different chemical action ensues, as not only that portion of the blade dipping in the water is rapidly attacked, but the upper part of it immediately shows the result of chemical action, and also the subsequent chemical re-actions are greatly modified by the presence of the carbonic acid. For in this case that portion of the blade is only covered with a film of carbon, together with a dark deposit, composed of carbonate of the protoxide and hydrate of the sesquioxide. The fluid, instead of remaining clear, becomes turbid.

These series of experiments substantiate the interesting fact observed—that carbonic acid promotes oxidation.

A long series of experiments were also made to try and throw some light on the curious fact, first published by Berzelius, subsequently studied by other chemists, and well known to soap and alkali manufacturers, namely, that caustic alkalies prevent the oxidation of iron. My researches can be resumed as follows:—

1st. That the carbonates and bicarbonates of the alkalies possess the same property as their hydrates; and

2nd. That if an iron blade is half immersed in a solution of the above-mentioned carbonates, they exert such a preservative influence on that portion of the bar which is exposed to an atmosphere of common air (oxygen and carbonic acid), that it does not oxidize even after a period of two years.

Similar results were obtained with sea water to which had been added carbonates of potash and soda.

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THE SANITARY MEASURES OF THE GOVERNMENT.

SIR C. B. ADDERLEY, M.P., writes as follows to his constituents :—"The work which has now occupied me two years, and during this recess has kept me much away from the country, namely, the Chairmanship of the Royal Sanitary Commission, seems to be approaching a successful end. The report is forthcoming, which gives a history of our confused and multifarious sanitary laws up to the present time, and extensive evidence, oral and written, on the imperfect working of local government—the most vital essence of our national vigour—in most parts of the country. It elaborates, through comment and argument, a complete consolidation into one clear statute all the provisions which in every town and parish of England and Wales, except the Metropolis, are required for the health and social well-being of the community. Mr. Bruce assures me that he and two of his colleagues are now hard at work preparing a bill from these materials; and I hope that, while the better organization of our national defences will be necessarily the main subject of the labours of the approaching session, this great work of domestic reform may find its quiet opportunity. The idea of the one comprehensive Act will be to render uniform, general, and active the powers of local government in every place under the inspection and stimulus of a Central Authority."

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NEW BRIDGE AT MALTON.

ON Friday last, the North-Eastern Company completed for traffic a new bridge across the Derwent, connecting their railway system with the town of Malton. The structure is of iron and stone, and has two clear spans of 47ft. each, from massive stone abutments on each side. The roadway is carried on twelve iron box-girders, resting on a row of six iron piles and columns in the centre of the river, the hollow piles having been driven 14ft. into the river bed and then filled up to the socket with concrete. The width of the bridge is 30ft., giving a good roadway and tramway into the town, and two footpaths. The sinking of the cofferdams on each side was of considerable interest. On the North Riding side the place hit the centre of the site of the Roman town, but, singularly, few Roman relics turned up. These were silver and copper coins, which are held by Mr. Charles Cabry, of York, the engineer. At the very bottom the British (supposed) remains were reached, and, together with an enormous number of horns and bones (chiefly of small oxen), one bone skewer and two gold pins were found, which are now held by Mr. Monkman. Relics of later times—one a singular iron axe, in possession of Mr. J. R. Mortimer, of Driffield, and a large silver buckle, held by Mr. Thos. Cabry, the chief engineer—were also found. On the East Riding side there were none but fossil remains, the cofferdam being wholly in the hard Kimmeridge clay. The light appearance of the new bridge gives a greatly-improved approach to Malton, and the work has been carried out, under great difficulties from floods and storm, in a very substantial manner. The construction has been under the superintendance of Mr. Chas. Cabry, of York.

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ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—The ninth meeting of this Session was held at the Royal Institution on Wednesday evening. Mr. T. D. Barry and Mr. H. H. Statham read some Notes suggested by recent visits to some of the old English Cathedrals.

THE LEICESTERSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—The annual meeting of this society was held on Monday week, in the Town Library, Guildhall, Leicester, the Rev. J. H. Hill, F.S.A., in the chair. Mr. North, the honorary secretary, read a statement of accounts for the past year, showing a balance in favour of the society. He also presented and read the report of the committee for the year 1870.

YORKSHIRE ARCHITECTURAL SOCIETY.—On Tuesday week the general meeting of the members of the Yorkshire Architectural Society was held at the York School of Art, when the Rev. Canon Hey presided. The Rev. G. Rowe, the secretary, read the report :—"The society continues in a flourishing condition, and although the expenses of publication, &c., have this year been heavy, there is still a considerable balance in the hands of the treasurer. The paper on the Rural Deanery of Knaresborough, by the Rev. J. R. Lunn, has been published, illustrated by five lithographs of the most worthy points of detail. A beginning has been made towards copying and publishing specimens of the stained glass in York Minster, resulting in several coloured lithographs representing some of the earliest date, which will appear in the annual volume. This work has been most carefully done by Mr. J. Knowles, glass painter, of York." The chairman said that the balance in favour of the society had been increased during the past year, and there now remained in hand upwards of £100. Mr. G. F. Jones moved the adoption of the report, and the Rev. W. Haworth seconded the motion, which was carried.

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* Read before the Manchester Literary and Philosophical Society, by Prof. F. CRACE CALVERT, Ph.D., F.R.S., &c.

ARCHÆOLOGICAL.

SOME ACCOUNT OF ROUGEMONT CASTLE, EXETER.—On the highest part of the hill on which this city is built, and on the north-east extremity, stands the remains of the castle of Rougemont, so called from the redness of the soil. Grafton, in his "Chronicle," says it was the work of Julius Cæsar; afterwards the seat of several Saxon kings, and since of the Dukes of Cornwall. Within the castle walls a chapel was built by the lady Elizabeth de Fortibus, Countess of Devon, who endowed it with lands, called the prebends of Hayes and Catton, for the payment of certain weekly services therein to be performed. This town and castle held out some time against William the Conqueror; but a part of the wall falling down it was surrendered at discretion. William contented himself with only altering the gates of the castle, as a mark of its being subdued; at the same time he either rebuilt or much repaired the whole edifice, and bestowed it on Baldwin de Brioni husband of Albreda, his niece, whose descendants, by the female line enjoyed it, together with the office of Sheriff of Devon, which seems to have been annexed to it, till 14 Henry III., anno 1230, when that prince resuming into his own hands sundry castles and forts in this realm dispossessed Robert de Courtney, in whose family it had been for three descents. In the reign of Henry IV., John Holland, Duke of Exeter, had a fine mansion within the castle, of which no traces are remaining. Anno 1483, the city being visited by King Richard III., he was, during his stay, nobly entertained by the corporation. On seeing this castle, he commended it highly, both for the strength and beauty of its situation; but hearing it was named Rougemont, which, from the similarity of the sound, was mistaken for Richmond, he suddenly grew sad, saying that the end of his days approached; a prophecy having declared he should not long survive the sight of Richmond. In the year 1588, at the Lent assizes held here, an infectious distemper, brought by some Portuguese prisoners of war, confined in the castle, destroyed Sir John Chichester, the judge; eight justices, eleven out of the twelve empanelled jurors, with divers other persons assembled on this occasion. During the Civil Wars the town was several times besieged and taken by both parties; but there is no account of any further particular defence or capitulation made by this castle. In the year 1655, John Penruddocke and Hugh Groove, both Wiltshire gentlemen, having joined in an unsuccessful attempt in favour of Charles II., were here beheaded, when many of an inferior rank were hanged at Heavitree gallows. The only remains at present are the strong and stately gateway (the original entrance from the city), and which is, perhaps, as venerable a vestige of Saxon fortification as any now extant in this kingdom. It consisted of an inner and outer gate, flanked by strong curtains, supported by buttresses; on the top of the gates are lunettes and machicolations for throwing down offensive things on the besiegers in case of an attack; and in the inner gate there are grooves for letting down a portcullis. The whole of the gateway projected from the wall and flanked the ditch. It was used in 1841 as a black-hole for offending soldiers, and inside was built a guard-house and store-rooms for the East Devon regiment of militia. Any visitors coming to Exeter should not forget to pay a visit to this famous old castle and grounds (which are most admirably laid out with splendid flower beds, &c.), which they can do through the kindness and permission of Mrs. Gard, the present proprietress, who allows any respectable persons to do so by leaving their names. The hours of admission are from ten to four.

THE OLD HOUSES NEAR BIRMINGHAM. — Mr. A. C. Everitt recently read a very interesting paper before the Archæological section of the Birmingham and Midland Institute, on the subject of "The Old Houses in Our Neighbourhood," illustrated with fifty sketches of the most remarkable remains. He divided his subject into three parts, first describing stone houses, then half-timbered houses, and then brick and stone houses. The buildings of oldest formation were of stone, partaking more or less of the castellated character, protected in many instances by a broad moat; these were erected in the period ranging from the 14th to the 16th century. The half-timbered houses were chiefly of the 15th and 17th century work; whilst those of brick and and stone were constructed from the 16th to the 18th century. Under the first head Mr. Everitt described Maxtoko Castle, near Coleshill—rather a fortified manor house than a castle, and in many respects a most perfect relic of the middle of the 14th century; Astley Castle, another embattled mansion, a few miles from Maxstoke; New Hall, a moated house, near Sutton Coldfield, which, previous tô the alterations now in progress had the most picturesque outline and appearance of any in our neighbourhood; Baddesley Clinton; and Coughton Court, between Birmingham and Alcester. The list of old stone houses also included a mention of the former rectory at Solihull, in the rectory grounds; and several houses at Sutton Coldfield, traditionally ascribed to the time of Bishop Vesey (16th century). Amongst the remains of ancient timber houses were the following:—The old hall of the Knights Templars at Temple Balsall, or Knowle; Oak House, West Bromwich; Berry Hall, near Solihull; Grimshaw Hall, near Knowle; Whateley Hall, near Hampton-in-Arden; the old house at Barnt Green; Blakeley Hall, Yardley; Pipe Hayes, near Erdington; Solihull Hall; the old Free School at King's Norton; and Packwood, near Baddesley Clinton. The brick and stone houses noticed were Pooley Hill, near Tamworth; Pillaton, near Penkridge; Perry Hall (Perry Barr); Hillfield Hall, Solihull; Grafton, near Bromsgrove; Sheldon Hall, Castle Bromwich Hall, and Aston Hall. In conclusion, Mr. Everitt remarked upon a number of specimens showing the gradual transit from the Elizabethan to what might be called the Georgian mansion, in which, by degrees, the picturesque character of gables, chimneys, and mullioned windows changed, and became more commonplace. He earnestly hoped that proprietors of old places would give their strenuous exertions to aid in preserving rather than restoring those heirlooms of departed generations.

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Building Intelligence.

CHURCHES AND CHAPELS.

CHURCH BUILDING IN THE DIOCESE OF MANCHESTER.—In the diocese of Manchester there have been eight churches consecrated within Bp. Frazer's first year, seven of them new edifices—including Emmanuel, Preston; S. Paul's, Low Moor; Christ Church, Blackpool; and S. John the Evangelist, Accrington, and one for reconstruction, S. Bartholomew's, Westhoughton. Four churches were enlarged or restored, six are described as built, but not ready for consecration, SS. James and Mark, Bolton; and S. Stephen, Haslington Grange; eight are rebuilding—three at Bolton, one at Douglas (Eccleston), one at Leigh, and one at Bacup; three are being enlarged or restored—S. Martin's, Witton; and S. Saviour's, Bamber Bridge; and fourteen are in course of building, two of them at Blackburn, and three in the neighbourhood of Bolton. The new churches "proposed" number twenty-six, and the lists include the following places:—Blackburn, S. Luke (Bank Top), Pleckgate, Rishton, Shevington, Carnforth, Oswaldtwistle, Church Kirk, Hapton, Brierfield, and Habergham Eaves.

DUNMOW.—It has been determined to reseat, re-arrange, and warm the parish church of Dunmow. A committee has been formed to carry out the work, to obtain plans, &c.

FRAMWELLGATE MOOR.—S. Cuthbert's church-of-ease, erected at Framwellgate Moor, near the city of Durham, from designs by T. C. Ebdy, F.R.I.B.A., was opened for divine service last week. The foundation-stone was laid by the very Rev. the Dean of Durham in May last. The chapel will accommodate 150 adults. The plan consists of nave, 42ft. 6in. by 21ft.; chancel 21ft. 3in. by 21ft.; organ chamber, and vestry. The pulpit, reading-desk, communion-table, and chancel stalls are executed in Dantzic oak. The style of architecture is early Geometrical English Gothic, with open timber roof. The nave is lighted with candle standards, formerly in the Cathedral, and the chancel with a large corona. In the centre of the frontal of the altar-cloth is a magnificent cross, seventeen inches in diameter, of crimson and gold silk—a facsimile of the jewelled gold cross found in the coffin of S. Cuthbert, now in the library of the Cathedral. The chapel is warmed by Haden's hot air apparatus.

ALL SOULS', LANGHAM-PLACE.—Mr. A. W. Blomfield, in compliance with instructions from the Marylebone Vestry, has prepared a report on the condition of the exterior of All Souls' church, Langham-place. The building, with the exception of the main plinth, which is of Portland, and the plinth of the Corinthian order round the spire, which is of granite, is constructed of Bath stone, and the present lamentable state of decay is, in Mr. Blomfield's opinion, owing to the want of care in selecting the material, and the disregard in some cases of its natural bed. Mr. Blomfield recommends that the tower, spire, and portico be first undertaken, and that they should be thoroughly done by a careful and experienced mason, under the supervision of the Chief Surveyor, without any cement repairs except for pointing. He thinks that the festoons of fruit and flowers might very well be restored to the Ionic capitals, and with very good effect. They could easily be executed in terra cotta and securely fixed in their proper places. The cost of restoring the stonework in the manner proposed would, Mr. Blomfield admits, be considerably larger than in the way recommended by the Chief Surveyor; but the latter plan would be found in the end to be false economy, besides having an unsatisfactory appearance in the first instance.

BUILDINGS.

LONGSIGHT.—The Board of Guardians of the Chorlton Union have resolved to borrow a sum not exceeding £3,000, to enable them to proceed with certain additions to be made to the female lunatic wards at the workhouse.

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TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

RECEIVED.—T. S. B., J. G., G. H. G., T. C. R., H. W. G. S. S., E. A. D., A. P., E. W. S., J. M., J. G., J. G. W., C. H., S. & Co., O. W. D, J. C., D. M., C. & G., J. N., W. E., G. R. R., B. W., A. B. H., E. W. S., M. P., T. G., G. H., W. W., R. B. M., W. B., T. B., G. H. G.

E. W. BROWN.—Your sketch came too late and is returned. Besides, it is not up to the mark.

E. T. R.—MS. to hand.

TEN YEARS SUBSCRIBER.—We think at Eastwood's Belvedere-road, Lambeth, or the Broomhall Brick and Tile Co., Cox's Wharf, Upper Ground-street.

A. S.—The sketch book will not be continued for another vol., or not at present, at all events.

W. L. G.—The drawing came too late; besides, it was hardly suitable.

"H. S" says I am rather astonished to see in our local sheet almanacks the professions "architects and surveyors," "architect and civil engineer," &c., figuring conspicuously amidst hosiers, glovers. hatters, boot and shoe makers., &c., &c. I am still more astonished that having paid for their names appearing in such a place they do not take the full advantage of it, and state that plans, &c., are made on the shortest notice and most reasonable terms, and repairs neatly executed, but I presume this is implied."

LIEUT.-COL. SCOTT, R.E.—Proofs returned too late to make all the corrections.

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Correspondence.

SATURDAY HALF-HOLIDAY.

(*To the Editor of the* BUILDING NEWS.)

SIR,—It has been suggested that something should be done to obtain the Saturday half-holiday for such in the architectural profession as at present are denied it. And as it will greatly facilitate the matter to know to what extent the half-holiday is recognised by the profession, will you kindly allow me to ask, through your columns, if one gentleman in each office in London will communicate with me, stating whether or not the Saturday half-holiday is the custom in his office. The result of this I shall be glad to forward you, but of course withholding names.

By inserting this you will confer a great favour on such as, like myself, are kept behind the age.—I am, &c., A. Y. Z.

76, Church-road, Southgate-road, N.

KITCHEN BOILERS BURSTING.

Sir,—I trust the importance of the subject will excuse my again encroaching on your valuable space. Having pondered the matter since writing my former remarks at page 74 of your columns, perhaps my conclusions may be useful, being the result of practical experience as well as viewing the subject theoretically. I insist upon three things :—

1st. That, as I said, the pipes to and from boiler be laid with an inclination downwards towards boiler in every part of their course (I do not refer to branches).

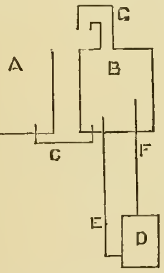
2nd. That these two pipes, the cold supply and the hot expansion pipe, be both wrapped round with felt in all extent.

3rd. You may have a hot water hermetically-sealed tank or tanks, branching off the boiler, but these are not to the purpose for keeping the boiler from bursting ; what I consider should be put in for safety is a hot-water revolving cistern, with a lid, which can be at least in part lifted off and on if wanted. When said lid is down, the steam which rises off the water gets away through a 3in. pipe, which is carried up to roof. As the hot water cistern I refer to is generally placed in the garret, it is of course near the roof. This hot cistern may be either large or small, according to circumstances, while its use in frosty weather is this—the boiler getting warm, the water in it begins to rise up the expansion pipe, and of course goes into cistern and heats it a little ; but while the water in the one pipe goes up, the other then goes down, and by thus revolving continually, the water in the hot cistern with the two pipes connecting it and the boiler, all get hot, so that there is no danger of bursting of the boiler from frost in such a case so long as a supply of water and fire is kept up.

I append postscript with sketch if judged necessary to give it.

As to the gas idea at page 98, I am afraid it is too complicated, and I cannot see how it can be put in for "only a few shillings ;" besides, it is not self-acting, nor continuously acting, as is the hot-water cistern I have above referred to, unless the gas is lighted. Supposing it would act then, it would be useless, while in many cases the gas might be lighted when not required, and possibly omitted when really necessary. Consequently I think that the foregoing plan I have given, though nothing new, will be found to work best, and to be also by far the cheapest.—I am, &c.,

Plumber.



P. S. The following is a sketch of a hot-water cistern placed alongside of the cold-water one in a garret. A is the cold cistern, B the hot one (which may be of iron or wood lined with sheet lead), C is the water pipe which supplies B from A, and which enters both cisterns at bottom. The cold cistern A is of course filled in the usual way, which the plumber looks after, as well as overflows, &c. D is the kitchen boiler, E the pipe going down to it, and F the hot or expansion pipe, from which the different branches can be taken off. It will be observed that F rises about 2in. higher than E. G is the 3in. steam pipe open to outside.

ARCHITECTS AND THEIR ASSISTANTS.

Sir,—Could you kindly enlighten us on the following subject, and would you at the same time do us the favour of inserting this in your next issue, in order that some of your numerous correspondents may give us their opinion on the matter.

In a small town in the West of England, where there are *three* or *four* architects' offices, the principals have lately had a meeting to discuss the propriety of allowing their assistants to take out quantities, and supply builders with the same after office hours, when they very soon came to the conclusion, "That it should no longer be done with their permission," and some stated, "That they would not allow any works whatever to be performed by their assistants on their own account." And have given us notice accordingly.

Why this subject was brought up we cannot say, unless our employers are afraid that the small amounts we have received the last few years for similar works has not been properly applied.

If the practice is on any reasonable grounds objectionable, we do not wish to continue it. But as we cannot see the objection, it being an advantage to us and no injury to our employers, we feel it very sharp practice.

Information on this matter will greatly oblige,—Yours, &c., Would-be-Industrious.

THE INSTITUTE AND YOUNG ARCHITECTS.

Sir,—"They must help themselves who would have others help them," is an old proverb and a true one ; it suits the present position of the junior members of the architectural profession exactly ; they are doing and have done all in their power to help themselves, and are surely justified in calling upon their seniors, through their representative society, to, at all events, listen to their suggestions. This, the Institute, through one of its most eminent officers, all but declines to do, and oracularly condemns all who would wish to obtain knowledge by a different method (possibly not better) than that with which their seniors, in their day, were satisfied.

"The Institute will examine, but it will not educate," is the dictum that society propounded some years since. Surely their capital would be better invested in training their successors than in Consols; but it is not in that light that the "Old Women of Conduit-street" view the matter.

The Institute might become the "Alma Mater" of young architects, which they would not forsake when they grew older, and we should not then have to deplore the fact that the members of the Royal Institute of *British* Architects do not number much more than a tithe of the practitioners.

In your article of Feb. 3rd, on "The Family Coach," you notice the fact of there being so few students at the Institute. Is this to be wondered at ? What can they study? What advantages are offered them beyond—

1st. The hearing learned papers, usually Archæological (though now apparently changing for the more practical) on alternate Mondays during the session ; these I am sure you will agree do not in themselves furnish sufficient food for the young architectural mind to feed upon.

2nd. The competitions for the prizes, &c., which truly deserve more notice than they receive.

3rd. The use of the library. One drawback to this very valuable privilege is the fact of its not being a circulating one. Persons, when absolute reading is concerned, usually prefer solitary study, and it is here that the very small library of the Architectural Association tells with advantage, the books continually changing hands.

Of course it cannot be expected that the scarce and very costly works, of which the Institute possesses so many, should be bandied about in this manner, but it would surely be better that the generality of the volumes should become worn out, through the fair usage of many successive hands, than that they should remain intact upon the shelves in all the glory of unsullied binding.

The poor success of the Art Classes may, I think, in a great degree be attributed to the excessive fees in comparison with those of the various schools of art which for elementary teaching answer the purpose equally well. Advanced students have not much inducement to join, as so few can devote two evenings per week to the study of *one* subject, when there are so many others demanding his attention ; true, he need not attend more than one, but still there is an objection to paying double price for any article.

Of the University and King's College classes, many that would prove attractive to architects are held during office hours ; the fees also are by no means low.

With regard to the comparative failure of the Voluntary Examination scheme, may not some portion of the blame be placed to the fact of their being held in the day time during what is often a busy season ? In the present lack of architectural work, assistants cannot afford to sacrifice an engagement, even for the chance of obtaining the coveted certificate, nor will principals consent to see their works at a standstill for a fortnight because their assistants have "gone in for the Voluntary."

Trusting you will consider my remarks worthy of a small amount of consideration, I am, &c.

Robt. E. P.

Feb. 8, 1871.

NEW LAW COURTS.

Sir,—The great disparity in the tenders for the "foundations" of these long contemplated works—the highest being £68,347, and lowest £36,755, showing a difference of £31 592 (which last sum, by the way, is ample for the construction of a moderate sized mansion)—is highly discreditable to one or the other of the competitors, and naturally? evokes the question, Whose tender ought to be relied on Or should either be considered ?

The acceptation of the highest tender is not often recorded, therefore of it I'll say nothing, but if I were one of the jurors appointed to decide upon the merits of the tenders submitted, unless it can be made apparent that the lowest has been based upon erroneous "quantities"—(in this case they must be something most egregious) which with reason, to practical men, will account for some thousands of pounds—I would certainly object to it ; indeed, as a rule, I should always pause before I accepted the *lowest* tender, as I do not recognise the policy of doing so.

If several contractors tender for a job I should propose to take the *mean of the aggregate whole* of the tenders, as the nearest approximate real value of the works, provided the mean amount arrived at be not inconsistent or seriously at variance with the architect's estimate of their cost.

It is difficult to conceive in "foundation work," where the quantities of material and the items to be computed are so few in comparison with those required for a perfect and finished structure, how any discrepancies of consequence can arise.

The tenders cannot but reflect very seriously on one or the other of the two contractors, between whom there is such an almost unprecedented difference ; therefore, from one of them, it is not too much, I hope, to expect, as we see the effect, startling as it is, that the cause be shown, by way of solving the mystery.

If more than one surveyor has supplied the quantities, I am not much surprised at the extraordinary result of the competition—*one set* only of bills should be allowed, as I hinted in your issue of Jan. 20 last.—I am, Sir, &c.,

J. M. L., Battersea.

Intercommunication.

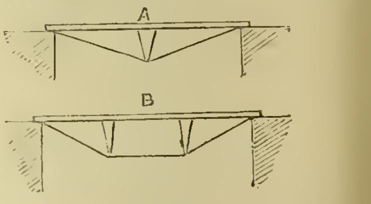
QUESTIONS.

[2119] VAL DE TRAVERS ASPHALTE.—Will you kindly state in Building News where I can obtain particulars as to cost, &c., of the Val de Travers Asphalte ?—W. Usher.

[2120] DRAWING BOARDS.—I have a double elephant drawing board, made by Stanley. When I strain a sheet of paper on it I find the next day and every day that the paper comes up all over in waves. On holding it for a short time before the fire it stretches all right again, but soon returns to its slackened state. Will some reader inform me the cause of this and the remedy ?—Annoyed.

[2121] OLD S. PANCRAS CHURCH.—Will some correspondent inform me what is the date of this Norman building, which stands at the back of S. Pancras Station, and, I think, opposite the workhouse ? Should like to know whether it is good old architecture or modern.—Young Architect.

[2122] STRAIN ON TENSION ROD.—Will some kind reader give me the formula for calculating the strain on tension rod and horizontal thrust of beam of the following



form of trussed beam, and example of each worked out?—A Subscriber.

[2123] REMOVING COLOURS.—Would any reader of "Intercommunication" kindly inform me what will take out any of the following colours :—Prussian blue, yellow ochre, brown, and Paine's grey.—F. W.

[2124] CRUSHING WEIGHT OF STONES.—Can any of your numerous readers give me any information as to the crushing weight of the following stones, viz., Ancaster, Darley Dale, and White Mansfield ?—X. Y. Z.

REPLY.

[2104] TEMPERATURE OF DAIRIES.—I quite agree with "W. W." that a cheese room requires an equal temperature of 65 deg., but a milk room which it is proposed to build on the ground floor should be at least 15 deg. colder, and to preserve this low temperature during the summer months it would be found advisable, if practicable, to sink the floor a few feet below the adjoining ground, the walls being built hollow for the prevention of damp. The use of hot water pipes is quite unnecessary, for I am convinced from my own experience that if the dairy be built in the above manner, with careful attention to the admittance of fresh air, a tolerably equal temperature of about 50 deg may be maintained. A verandah round the dairy would be very convenient in shading from the sun in summer and adding to the warmth in winter, and would also form a favourable place for drying and airing the utensils in rainy weather.—Farmer.

WATER SUPPLY AND SANITARY MATTERS.

THE GOVERNMENT AND THE DRAINAGE OF TOWNS.—At a meeting of the Windsor Local Board of Health on the 25th ult., the following letter was read from the Local Government Act Office, in answer to an inquiry made by the Board as to whether the Government contemplated legislating for the whole kingdom in regard to the drainage of towns:—"Local Government Act Office, 8, Richmond-terrace, Whitehall. Jan. 3, 1871. Sir,—I am directed by Mr. Secretary Bruce to acknowledge the receipt of your letter of the 29th ult., with reference to the report that the Government intend legislating for the whole kingdom in respect of the drainage of towns. In reply I have to inform you that I am unable to give you any official information on the subject of your letter. It is generally expected that some legislation affecting the whole kingdom in relation to local improvement, of which town sewerage must form an important element, will be the result of the report of the Sanitary Commission, but the report has not been sent in, or if sent in, has not yet reached this department.—I am, Sir, your obedient servant, J. MONTAOUE, Chief Clerk.

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LAND AND BUILDING SOCIETIES.

COLCHESTER PERMANENT BENEFIT BUILDING SOCIETY.—The annual meeting of this society was held on Monday last. The annual report of the Directors was read and adopted. Messrs. Harvey, E. S. Sanders (vice-chairman), J. Bedwell, and T. Moy were re-elected. The report stated that during the past year 11¾ borrowers' shares were discharged by lapse of time, and 46¾ were paid off by the mortgagees at periods short of those for which the loans were granted. The advances made during the past year amount to £7,150, being £3,175 more than in the previous year. The total advances for the 14 years were £71,315, averaging more than £5,000 a year.

THE NATIONAL FREEHOLD LAND SOCIETY.—Last week the twenty-first annual meeting of this society was held at the Terminus Hotel, Cannon street, Mr. C. Gilpin, M.P., in the chair. The chairman, in moving the adoption of the report, said he had really nothing to add either to the statements in that document or to the very full, clear, and accurate balance sheet which had been laid before them. He would not go out of his way to make a speech when they had simply to transact business, and when there was nothing else but business to talk about. Taking, then, the report, he found that the balance sheet for the past year showed a decrease in the deposits received of £82,327 as compared with the previous year, while on the other hand the withdrawals were less by £31,430. The capital of members was £11,210, the amount at the end of the year being £1,088,266, as compared with £1,099,476 at the end of the preceding year. The amount advanced on freehold and leasehold securities had been £20,094 more than in the previous year, while the repayments were £12,667 less, owing to the increased facilities given to borrowers by extending the time for repayments, by allowing advances to remain at interest only after the balance is reduced, and by lending at a fixed rate of interest for three years certain. All these changes had been made in the interest of borrowers, and he thought the result had proved that they were beneficial also to investors. He was happy to say that a further sum of £55,917 had been added to "convertible securities," making the total amount of these securities £21,018. The gross profit for the year was £58,476, and after deducting current expenses, interest paid on completed shares, and the profit added to uncompleted shares, there remained a balance of £19,738. Of this amount the board had placed a further sum of £5,000 to the credit of the reserve fund, which now stood at £20,000, and the directors recommended that a bonus of 1 per cent. be paid to the members, as on the last occasion.

THE UNITED LAND COMPANY (LIMITED).—The annual meeting of the shareholders took place on Monday at the Norfolk-street office. The report stated that the sale of land had amounted to £39,176 1s. in various counties, that the whole of the preliminary expenses were paid off, that a contingency fund of £1,000 had been created, and a considerable balance taken forward to next year's account. The dividend declared was 5 per cent. for the year, and a bonus of 3 per cent., making a total dividend for the year ending 31st December, 1870, of 8 per cent.

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LEGAL INTELLIGENCE.

COURT OF BANKRUPTCY, FEB. 8.—RE EDWARD CORDERY.—This was an order of discharge sitting under the heavy failure of Edward Cordery, of Cunningham-road, Hammersmith, builder, who petitioned the Court on the 10th November, 1868, by Mr. J. R. Chidley, solicitor, Old Jewry Chambers. Mr. W. Upwan, of Copthall Court, attended as solicitor for the assignees. The voluminous accounts, compiled by Mr. J. J. Kent, of Basinghall-street, upon which the bankrupt passed his examination on the 12th January last, and which has been appealed against before the Lords Justices, disclose total debts, £28,377 14s. 10d., and deficiency £23,050; his expenditure had been £630 for the last two years of his trading. Mr. Upwan said the appeal had not yet been decided by the Lords Justices. Mr. Registrar Hazlitt: Then in that case I cannot proceed with the order of discharge. The sitting must be adjourned for a month, with liberty to apply for an earlier day should the appeal be sooner decided.

COURT OF BANKRUPTCY.—IN RE ALBERT JOHN TATHAM.—(Before Mr. Registrar Spring Rice acting as Chief Judge.) The debtor in this case, who is described as of No. 14, South Wharf, Paddington, Cement Merchant, filed a petition in this court on the 27th January under the arrangement clauses of the Bankruptcy Act, 1869. His liabilities are estimated at over £10,000 and the assets are believed to be of considerable value. His affairs have created considerable interest amongst persons engaged in the lime, cement, brick, tile, and building trades, some of the principal firms in which will be heavy losers.—On the application of Messrs. Lewis Munns, Nunn & Longden an order was on Saturday made appointing Mr. Horatio Edward Norfolk, of 11, Coleman-street, public accountant, receiver and manager of the debtor's property and business.

IMPORTANT TO SURVEYORS OF LOCAL BOARDS.—In the Court of Queen's Bench on the 27th ult., before Mr. Justice Blackburn, Mr. Justice Mellor, and Mr. Justice Lush, a case was heard which raised a question of some interest to surveyors and local Boards. It was an action against the Corporation of Canterbury—the local Board, and as such Board, surveyors of highways—for an injury caused to a Mrs. Forman by the negligence of their servants. It appeared that their men had placed upon a road going to Canterbury 20ft. wide, a heap of stones extending 7ft. across the road, and had left it there without a light. The plaintiff was driving his wife, on a dark night, along the road, and the horse not seeing the obstruction ran the chaise up against it and upset it. The result was that the wife was very seriously and permanently injured, having lost the use of her arm for life, and being so disabled as to necessitate the employment of a housekeeper. The defendants' counsel at the trial before Lord Chief Justice Bovill at Maidstone, last summer, admitted that the Board caused the obstruction, but insisted that there was no liability for it, as they had a right to put stones or other materials on the road for the purpose of repairs. The Lord Chief Justice, however, ruled that they were bound to use reasonable care in so doing, in order to avoid danger of accidents, and it would be for the jury to say whether they had been guilty of negligence, or whether, as was suggested, the accident happened by reason of the darkness of the night. The jury found for the plaintiff, damages £1,200, and the Lord Chief Justice at the same time declared that he was satisfied with the verdict. The verdict was now impugned on the ground that the Corporation were only liable as local board and as surveyors of highways; and that, in that capacity, they were not liable to an action. Mr. Hawkine, Q.C., and Mr. Archibald were for the plaintiff; Mr. Dennan, Q.C., and Mr. G. Francis were for the Corporation. The court were clearly of opinion that the action was maintainable against the Corporation, as it was admitted that their servants had caused the obstruction.—Judgment for the plaintiff.

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Our Office Table.

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MR. PUGIN'S TRIAL FOR ASSAULT AND LIBEL.—At Ramsgate Townhall, on Saturday last, Mr. Edward Welby Pugin was summoned for assaulting Thomas Jones Burton; and a cross summons was also called between the same parties, but neither of them appeared, and the case was dismissed. At the same time Mr. Edward Welby Pugin and Mrs. Jane Welby Pugin, his mother-in-law, and Bernard Welhan (late secretary to Mr. Pugin), were summoned for maliciously publishing defamatory libels against Mr. John Barnett Hodgson, postmaster at Ramsgate, and Miss Fanny Elizabeth Hale, his niece. The solicitor for the prosecution stated that counsel for the defendants having applied to Mr. Straight, M.P., who is specially retained for the prosecution, to have the case adjourned till that day week, Mr. Straight had consented. The solicitor therefore asked for an adjournment till the following Saturday (to-morrow). The Bench granted the application. The case has excited a great deal of interest on account of the position of the parties, and also from the fact that Mr. Welby Pugin is held to bail till the ensuing spring assizes for Kent upon a charge of libel against Mr. Hodgson.

NEW WORKS AT SOUTH KENSINGTON.—On Saturday afternoon last about forty of the members of the Architectural Association were conducted by Mr. Gilbert R. Redgrave over the buildings for the new Science Schools and the new South Court of the Museum. The former is a very lofty and imposing block, facing the Exhibition-road, and executed in red brick, with terra-cotta ornamentation. In this building will be included four or five large lecture-rooms or halls, and numerous rooms for classes, &c. The terra-cotta work has been executed by Mr. Blanchard, of the Blackfriars-road, the weight on the columns of that material being borne internally, however, by strong iron stanchions. The floors are on Fox & Barrett's principle. Facing this block of buildings, and connected with it either by an iron bridge across, or a subway beneath, the Exhibition-road, will be the new Indian and Natural History Museums, which will be erected on a part of the site of the Exhibition of 1862. The new South Court is much loftier than any of the other courts yet erected, and is intended for objects of great size. This court will be, like the most recent court completed, a double one—*i.e.*, it will be in two spans, with upper and lower colonnades running along the entire length of the building, and dividing it into two halves, each spanned with a semicircular iron and glass roof.

ALBERT HALL.—Considerable progress has been made during the last few days towards the completion of the internal arrangements of the hall. The ugly but necessary scaffolding has all been removed, and the whole of the glass roof has been uncovered, so that the fair and beautiful proportions of the building are now displayed to the view of the spectator. These proportions will possibly never be seen to greater advantage than now; in a day or so, hangings, curtains and chairs will break the graceful curves. The curtains of the private boxes will be of crimson, and the carpeting of them green. In every other respect the fittings will be according to the tastes of the holders, who will be allowed full license, so long as the general effect is not interfered with. The bright, massive pipes of the organ are being rapidly reared in their places, and in all the departments the utmost activity is being displayed under the superintendence of Lieutenant-Colonel Scott and Mr. Wentworth Cole, to perfect the arrangements by the day of the opening ceremonial by the Queen.

INSTITUTION OF SURVEYORS.—At the ordinary general meeting, held on Monday, January 30th, the following names were read and passed for ballot, viz.:—As Members,—Rowland George Fisher, 17, Great George-street, Westminster; William Frederick Hart, 16A, King's-road, Bedford Row; William Knowles, King-street, Gloucester. As Associate,—Joseph Quick, jun., Sumner-street, Southwark. The following Donation to the Library Fund was announced,—J. C. Clayden, £2 2s. The following Candidates were balloted for and declared duly elected:—As Honorary Members—The Hon. Charles Alexander Gore, Office of Woods, Forests, &c., Whitehall-place; the Hon. James Kenneth Howard, Office of Woods, Forests, &c., Whitehall-place. As Member—Alexander Milne Dunlop, 1, Westminster Chambers, Victoria-street. The next Meeting will be held on Monday Evening, February 13th, when the discussion on the Paper by Mr. W. Matthews, jun., entitled, "The Valuation of Annuities and Reversions Dependent upon Terms of Certain Duration," will be resumed. The Chair to be taken at eight o'clock.

THE MAINTENANCE OF HIGHWAYS.—At a meeting of the Somerset Chamber of Agriculture on Friday last, the Council proceeded to consider the injustice of the exemption from highway-rate of income arising from personal property, and after a general discussion the following resolution was adopted:—"That in the opinion of this Council, public highways of every description tend to cheapen the price of commodities to all classes of consumers; and, therefore, that the maintenance of the highways should be an imperial charge to be borne by the public."

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Chips.

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A site for a new church has been purchased at Rishton, Lancashire.

The case of Mr. Hemans, civil engineer, against the Waterford and Central Ireland Railway Company, was before the Irish Court of Queen's Bench last week. The claim was for £5,600 for professional services, and at the trial the jury gave him a verdict for £740, but he moved the Court to increase the amount, and on Wednesday the judges fixed the damages at £1,680.

On Sunday last the gallery in the United Methodist Chapel, at Troon, Camborne, gave way soon after the commencement of the sermon. The gallery was moderately full, but no one was seriously injured.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Institution of Surveyors.*—Discussion on Mr. W. Matthews's paper "On the Valuation of Annuities and Reversions Dependent upon Terms of Certain Duration." 8 p.m.
Architectural Association.—"On Limes and Cements." Lecture II. By Lieutenant-Colonel Scott, R.E. 7.30 p.m.
TUESDAY.—*Institution of Civil Engineers.*—8 p.m.
WEDNESDAY.—*Society of Arts.*—8 p.m.
FRIDAY.—*Civil and Mechanical Engineers' Society.*—"Notes on Old London: Architectural and Engineering." By Mr. C. H. Rew. 7.30 p.m.

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Timber Trade Review.

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PRICES 7th February:—Timber, per load of 50 cubic feet.—Riga, 65*s* to 67*s*; Dantzig and Memel crown, 80*s* to 90*s*; do. best middling, 70*s* to 80*s*; do. good middling and seconds, 62*s* to 67*s*; do. common middling, 52*s* to 57*s*; do. undersized, 52*s* to 60*s*; do. small, short, and irregular, 45*s* to 55*s*; Stettin, 53*s* to 60*s*; Swedish, 52*s* to 55*s*; do. small, 45*s* to 50*s*; Norway and Swedish balks, 32*s* to 38*s*; Quebec yellow pine (large), 85*s* to 105*s*; building sizes, 65*s* to 75*s*; St. John's and board pine, 75*s* to 90*s*; pitch pine, 60*s* to 75*s*; Quebec oak, 120*s* to 125*s*; elm, 85*s* to 95*s*; birch (large average), 75*s* to 100*s*.

Planks, deals, &c., per Petg. std.—Archangel yellow, 12*l* 10*s* to 13*l* 10*s*; do. 2nd, 9*l* to 9*l* 10*s*; Petersburg yellow, 12*l* 10*s* to 13*l* 5*s*; Wyburg yellow, 9*l* 5*s* to 9*l* 10*s*: Finland and handsawn Swedish, 7*l* to 9*l*; Petersburg and Riga white, 8*l* 10*s* to 9*l* 5*s*; Gefle and best Swedish deals, 10*l* 10*s* to 12*l*; Swedish battens, 9*l* 10*s* to 10*l* 10*s*; Quebec 1st floated, 16*l* to 17*l*; do. 2nd, 12*l* to 12*l* 10*s*; do. 3rd, 8*l* to 9*l*; do. 1st bright, 18*l* to 19*l* 10*s*; do 2nd, 12*l* 15 to 13*l* 10*s*; do. 3rd, 8*l* 15*s* to 9*l*; Canadian spruce, 1st quality, 8*l* 15*s* to 11*l*; do. 2nd, 8*l* 5*s* to 8*l* 15*s*; do. 3rd, 7*l* 15*s* to 8*l*; New Brunswick, 1st quality, 8*l* 5*s* to 8*l* 15*s*; do. 2nd, 8*l* to 8*l* 5*s*; do. 3rd, 7*l* 5*s* to 7*l* 10*s*; do. unsorted, 7*l* 15*s* to 8*l* 10*s*; Nova Scotia and Prince Edward's Island, 7*l* to 7*l* 10*s*; United States pitch pine planks, 12*l* to 12*l* 10*s*.

Flooring boards, per customary square.—1st yellow, 7*s* 6*d* to 10*s* 6*d*; white, 7*s* to 9*s* 6*d*; 2nd qualities, 6*s* to 7*s*; matched boards, 5*s* to 7*s* 6*d*.

Lathwood, per cubic fathom.—Petersburg, 5*l* to 5*l* 10*s*; Riga, Dantzig, Memel, and Swedish, 3*l* to 5*l*.

Firewood, per cubic fathom.—Swedish red deal ends, 3*l* 15*s* to 4*l* 5*s*; Norway red and white boards, 3*l* to 3*l* 10*s*; round and slabs, 2*l* 5*s* to 2*l* 15*s*.

Oak staves, per mile of pipe:—Memel crown, 170*l* to 180*l*; do. brack, 130*l* to 135*l*; Dantzig, Stettin, and Hambro' full-sized crown, 120*l* to 130*l*; Canadian standard pipe, 75*l* to 77*l* 10*s*; do. puncheon, per 1,200 pieces, 22*l* to 24*l*; Bosnia single-barrel, per 1,200 pieces, 25*l* to 26*l*; United States pipe, 40*l* to 50*l*; hogshead, heavy and extra. 35*l* to 45*l*; slight 30*l* to 82*l*.

Wainscot, per log 18 cubic feet.—Riga crown (English and Dutch), 4*l* to 5*l*; do. brack, 2*l* 10*s* to 3*l* 5*s*; Memel and Dantzig crown, 3*l* 15*s* to 4*l*; do. brack, 2*l* to 2*l* 7*s*.

Stock of Timber, Deals, &c., at the Public Docks on Feb. 1.

	1871.	1870.	1869.
Foreign deals...in pieces	1,897,000	1,529,000	1,948,000
Do. battens ......do.	1,090,000	753,000	1,018,000
Do. boards ......do.	1,469,000	1,168,000	2,114,000
Do. fir timber in lds.	31,900	22,900	39,600
Colonial pine deals and battens ...in pcs.	1,396,000	1,219,000	720,000
Spruce do.........do,	572,000	780,000	1,259,000
Pine, timber in lds.	1,800	3,400	5,200
st Indian Teak ...do.	9,100	11,600	6,300

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:—

Pig Foreign	per ton	£17 10 0	£17 2 6
,, English W.B.	do	19 10 0	19 12 6
,, Lead Co.	do	18 12 6	18 15 0
,, Other brands	do	18 2 6	18 5 0
Sheet Milled	do	19 0 0	19 10 0
Shot, Patent	do	20 10 0	21 0 0
Red or Minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry	do	27 0 0	0 0 0
,, ground in oil	do	0 0 0	0 0 0

COPPER:—

British—Cake and Ingot	per ton	£72 0 0	73 0 0
Best Selected	do	74 0 0	75 0 0
Sheet	do	75 0 0	78 0 0
Bottoms	do	78 0 0	80 0 0
Australian	do	72 0 0	75 0 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars, cash	do	65 0 0	66 0 0
,, Refined ingot	do	70 0 0	72 0 0
Yellow Metal	per lb	0 0 6¾	0 0 7

IRON:—

Pig i Scotland, cash	per ton	£2 11 7½	0 0 0
Welsh Bar, in London	do	7 0 0	7 10 0
,, Wales	do	6 7 6	6 12 6
Staffordshire	do	7 15 0	8 5 0
Rail, in Wales	do	6 5 0	6 10 0
Sheets, single in London	do	9 5 0	10 5 0
Hoops, first quality	do	8 15 0	9 5 0
Nail Rod	do	7 7 6	7 15 0
Swedish	do	9 10 0	9 15 0

TIMBER.

Teak ....load	£12 10	13 10
Quebec, red pine	3 15	4 15
,, yellow pine	4 5	6 5
St. John N.B. yellow	0 0	0 0
Quebec Oak, white	6 0	6 5
,, birch	3 15	5 0
,, elm	4 5	4 15
Dantzic oak	5 5	6 15
,, fir	2 15	4 10
Memel fir	3 5	4 5
Riga	3 5	3 10
Swedish	2 5	2 15
Masts, Quebec red pine	4 0	5 5
,, yellow pine	4 0	5 5
Lathwood, Dantzic, fm	3 0	5 0
,, St. Petersburg	5 0	5 10
Deals, pr C., 12 ft. by 3 by 9 in.,		
Quebec, white spruce	12 0	17 0
St. John, white spruce	12 10	14 0
Yellow pine, per reduced C.		
Canada, 1st quality	18 0	19 10
2nd do.	12 15	13 10
Archangel, yellow	11 10	13 10
St. Petersburg, yel.	12 15	13 5

Finland	£7 0	£8 0
Memel	0 0	0 0
Gothenburg, yellow	8 10	10 10
,, white	8 0	8 10
Gefle, yellow	10 10	12 10
Soderham	8 10	12 0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10 0	12 10
Flooring boards, per	s. d.	s. d.
sq. of 1in., first yel	7 6	10 6
First white	7 0	9 6
Second qualities	6 0	7 0
PUMICE STONE pr ton	6 0	8 0
OILS, &c.		
Seal, pale....per ton	£'6 10	0 0
Sperm body	82 0	0 0
Cod	35 10	36 0
Whale, Sth. Sea, pale	36 0	37 0
Olive, Gallipoli	50 0	0 0
Cocoanut, Cochin, ton	45 10	46 0
Palm, fine	38 10	0 0
Linseed	30 15	31 0
Rapeseed, Eng. pale	48 0	49 10
Cottonseed	28 0	84 0

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Trade News.

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TENDERS.

BLACKFRIARS.—For fittings at 38, New Bridge-street, Blackfriars, for Messrs. Spiers & Pond. Quantities supplied by Messrs. Pain & Clark:—

	Spanish mahogany.	Deduction if Honduras mahogany.
Thompson	£685	£50
Cook & Green	575	55
Lascelles	556	56
Manley & Rogers	555	31
Drew	535	20
Bracher & Son (acceptd)	499	50

BEDFORDSHIRE.—For alterations and addition to Blunham house, Bedfordshire, the residence of Sir S. G. Payne, Bart. Mr. John Usher, architect. Quantities supplied:—

Fletcher	£3140 0
Moore	2769 0
Hutchinson	2596 0
Twelvetrees	2558 0
Cunvin	2555 0
Freshwater	2550 0
Carter	2435 0
Wildman & Edey	2420 0
Young	2327 0
Hull	2176 10
Spencer	2139 0
Vickers	2119 10
Foster (accepted)	1989 0

CATERHAM.—For house in Whyteleaf-road, Caterham, Surrey, for Mr. G. H. Drew. Mr. R. Martin, architect. Quantities supplied by Mr. F. Sparrow:—

Turner & Sons	£1069
Jarrett	1063
Langmead & Way	1050
Ward	1044
Smethurst	1029

CHELSEA.—For alterations and additions to St. George's Hanover-square, Union, Fulham-road, Chelsea:—

Turrell (Sloane-street)	£2594
Henshaw	2593
Newman & Mann	2525
Nutt & Co.	2493
Haylock	2460
Hoare & Postlethwaite	2430
Wood	2385
Hill, Keddell, & Waldram	2375
Fill	2375
Wigmore	2350
Mann	2345
Wright Bros. & Goodchild	2345
Cook & Green	2333
Snowden	2333
Nightingale	2332
Scrivener & White	2291
Manley & Rogers	2277
Carter	2263
Thompson	2234
Torkington	2100
Stephenson	1939
Turrell (Seymour-place)	1845
Bradley	1750

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

WHITCHURCH, Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. Local Board Officer Whitchurch, Salop.

WHITCHURCH (Whitchurch Local Board), Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. S. M. Lockwood, architect, 85, Foregate-street, Chester.

WAR OFFICE, Feb. 25.—For works and repairs, and supply of building materials to War Department. Buildings and property at Ashton-under-Lyne, Birmingham, Bradford, Burnley, Bury, Carlisle, Chester, Coventry, Fleetwood, Hartlepool, Isle of Man, Leeds, Liverpool, Manchester, Maryport, Newcastle-on-Tyne, Northampton, Paull-on-the-Humber, Preston, Scarborough, Seaham, Sheffield, Stallingborough, Sunderland, Tynemouth, Weedon, Whitehaven, and York, including the surrounding neighbourhoods, from the 1st April, 1871, till 31st March, 1874.

WAR OFFICE, Feb. 14.—For the supply of materials, and for the performance of such bricklayers', masons', paviors', carriers', carpenters', slaters', smiths', gas-fitters', plasterers', plumbers', painters', glaziers', and paper-hangers' works and repairs (the estimate for any one work or repair not exceeding £300) as may be required by the Royal Engineer Department at the following stations in the Dover district, viz.:—Dover: fortifications and barracks at Dover, and from Dover to No. 1 Tower westward; and from Dover to (but exclusive of) Walmer Castle eastward. Ramsgate; from Walmer Castle, including No. 2 Battery, Sandown, to Ramsgate and Margate inclusive: Canterbury: barracks. Shorncliffe Camp: including the Royal Artillery Barracks, the temporary barracks, Sandgate Castle, Folkestone and Shorncliffe Batteries, and towers from No. 1 to No. 9 inclusive. Hythe: including Hythe Barracks, coast defences, from 10 to No. 24 Tower inclusive, and Royal Military Canal from Seabrook to Warehorn. Rye: including the coast defences from No. 26 Tower westward to Fairlight, and the Royal Military Canal from Warehorn to Cliff End. T. B. Collinson, Colonel, Commanding Royal Engineers, Royal Engineer Office, Dover.

BOLTON.—Contract C.—March 3.—The Corporation of Bolton are prepared to receive tenders for the joiners' work, plastering, painting, glazing, and plumbers' fittings required for the completion of the new town-hall. The drawings and specifications may be seen, and bills of quantities obtained, on application at the offices of Mr. William Hill, architect, Park-square, Leeds; or at the offices of Mr. George Woodhouse, architect, St. George's-road, Bolton, between the hours of 10 a.m. and 5 p.m., from the 16th day of January next to the 3rd day of February next. Sealed tenders are to be sent in not later than 12 o'clock at noon of Friday, the 3rd day of March next, addressed to the undersigned at the Corporation Offices, Acres Field, Bolton, and endorsed "Tenders for the Town-hall, Contract C." R. C. Hinnell, Town Clerk.

BAKEWELL (Derbyshire), Feb. 16.—For the now schools A. Salvin, architect, 19, Cranley-place, Onslow-square, South Kensington.

BRISTOL LOCAL BOARD OF HEALTH, Feb. 23.—For contructing and completely finishing certain intended brick sewers, valve chambers, and other works in "The Avon Intercepting Sewer District." Length of sewers about 7563 yards, varying in size from 3ft. high by 2ft. 6in. wide to 7ft. 6in. in diameter. John G. Heaven, Clerk, Local Board of Health Office, 13, Prince-street.

BISHOP'S STORTFORD.—Contract No. 2.—Feb. 17.—For sewage, screening and storage tanks, engine and boiler house, and engine-man's cottage, with the necessary connecting pipes and valves, and an approach-road. Contract No. 3.—For duplicate boilers, engines, and pumps for lifting the sewage. William Gee, clerk, Bishop's Stortford.

TORQUAY.—Torquay Hotel Company (Limited), Torquay, Devon.—Feb. 29.—For the erection of additional buildings, &c. Mr. J. Allsop, secretary.

PORTSMOUTH, Feb. 20.—For the erection of a church at Portsdown, five miles north of Portsmouth. John Colson, architect, St. Swithin's-street, Winchester.

CREWE LOCAL BOARD, Feb. 15.—For a non-condensing horizontal pumping engine and boilers; also a condensing beam engine and boilers, for their sewage works at Crewe. Frederick Cook, Clerk to the Board, Temple-chambers, Crewe.

BIRMINGHAM, Feb. 25.—War Department triennial contract for builders' work. Colonel Commanding, Royal Engineer Office, Manchester.

BRADFORD, Feb. 25.—War Department triennial contract for builders' work. Colonel Commanding, Royal Engineer Office, Manchester.

SUFFOLK, Feb. 25.—For the reseating and other work to the parish church of Hadleigh, Suffolk. W. Grimwade, churchwarden, Bank, Hadleigh.

BERWICK-ON-TWEED, Feb. 25.—(1st) Building two tanks, engine and boiler-house. (2nd) Furnishing 30-horse power engine, boiler, pump, &c., and fixing. (3rd) Furnishing 2,700 yards of 9in. cast-iron pipe. (4th) Laying and jointing the same. J. C. Weddell, Clerk to Local Board.

PORTLAND, Feb. 16.—Nine hundred tons of dressed granite for the fort on breakwater. Lieut.-Colonel, Belfield, Commanding Royal Engineers, Weymouth.

ACTON LOCAL BOARD, Feb. 14.—For making up Mill-hill-road. Edward Monson, C.E., surveyor to the said board, Acton.

ACTON LOCAL BOARD (Main Drainage), Feb. 15.—Contract No. 9.—For laying a pipe sewer in Uxbridge-road. Edward Monson, C.E., surveyor to the said board, Acton.

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RANDELL, SAUNDERS & CO., Limited,

Quarrymen and Stone Merchants.

List of prices at the Quarries and Depôts, also cost of transit to any part of the United Kingdom furnished on application to

BATH STONE OFFICE,

[ADVT.] CORSHAM, Wilts.

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BANKRUPTS.

(TO SURRENDER IN LONDON).

Henry Wiber Webster, King's-road, Bedford-row, builder, Feb. 16, at 12.

(TO SURRENDER IN THE COUNTRY).

Thomas Cook, Greenwich, engineer, Feb. 20, at Greenwich.—Henry Joseph Ingram, Cheltenham, surveyor, Feb. 20, at Cheltenham—John Potter, Dudley, engineer, Feb. 20, at Dudley.

PUBLIC EXAMINATIONS.

Feb. 15, A. Combes, Tyndale-place, Upper-street, Islington, builder—Feb. 20, J. M. Edwards, Thornton-heath, builder—Feb. 27, J. Hughes, Liverpool, builder.

DIVIDEND MEETINGS.

Feb. 21, J. & W. Roose, Ashbourne, Derbyshire, and Stoke, Staffordshire, plumbers—Feb. 15, A. Nuttall, Accrington, stonemason—Feb. 16, J. Oldham, Barrow-in Furness, builder—Feb. 17, T. & W. English, Peterborough, painters—Feb. 25, G. Godbolt, Gorleston, builder.

DECLARATIONS OF DIVIDEND.

T. Love, Blackpool, builder, div. 1½d.—C. H. Whaites, North Elmham, Norfolk, brickmaker, div. 8d.

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PARTNERSHIPS DISSOLVED.

Ashworth & Brierloy, Manchester, art metal workers—Hodgson & Co. Castleford, brick and tile manufacturers.—J. & E. Bourne, Shawbury, Mukleton, and Old Woods, Salop, brick and tile manufacturers—J. & D. Petch, Scarborough, architects—J. C. & T. Waller, Dartford, builders—Newman & Thomas, Cheriton, brick, tile, and pipe manufacturers—Swainson & Dufton, Hunslet, plumbers.—Best & Smith, Manchester, painters—Aspinal & M'Grath, Manchester, painters—W. & J. Cardwell, Dewsbury, engineers—Everatt & Rudston, Hessle, joiners—Parker & Sons, Aston, builders.

BREAKFAST.—EPPS'S COCOA.—GRATEFUL AND COMFORTING.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—JAMES EPPS & Co., Homœopathic Chemists, London.

ROYAL POLYTECHNIC.—Novel and *bona fide* character of the CHRISTMAS HOLIDAY ENTERTAINMENTS—PROFESSOR PEPPER on THE WAR, AND THE DESTRUCTIVE IMPLEMENTS USED THEREAT!—MR. GEORGE GROSSMITH, Jun., gives the prettiest Fairy Tale, entitled THE YELLOW DWARF, every Evening. Entertainment by Mr. E. D. DAVIES, Premier Ventriloquist, entitled The FUNNIEST OF FUNNY FOLKS!—MADAME BOUSFIELD'S GRECIAN STATUARY in White Marble. New Ghost Entertainment. A Machine-made Watch, and Christmas and Christmas Customs, by J. L. KING Esq. Admission to the whole One Shilling.

THE BUILDING NEWS.

LONDON, FRIDAY, FEBRUARY 17, 1871.

TWO SORTS OF ORIGINALITY.

MOST people are agreed that if ever a living and characteristic style of architecture should prevail again, it will differ, at least in some points, from all that have gone before. It will not be exactly the style that prevailed in mediæval England, and still less that which prevailed in ancient Italy or Greece. Our circumstances and wants and feelings are not quite the same as those of the men who developed any previous variety of art. What suited them perfectly does not fit us at all equally well. If we adopt any of their systems, it is entirely for want of a system of our own; and at every turn we are being reminded of this want. We have no modern English style in the sense in which we have a modern English language. Our architects are situated just as our writers would be if they had to describe manufacturing processes in Ciceronian Latin, or scientific discoveries in the dialect of Chaucer. There are no equivalents for half their ideas: they must either coin new words or resort to endless circumlocutions. To change this state of things, to develope an architectural language adequate to our needs, is a vital necessity for us. The question is how it can best be done. It is worth looking about to see the different ways in which people are trying to do it. A casual observer, indeed, might say that very few people are trying to do it at all, and it is probably true that few are consciously attempting it. But the attempts are not less real because those who make them do not always see fully what they are doing. And in trying to classify the movements which tend towards a modification of style, it would not, perhaps, be a bad division to arrange them as conscious and unconscious ones. On one side are the efforts of one or another designer who sets to work deliberately to be original, who tries to reject the old altogether, and to begin upon a new foundation. On the other side are those of men who, if they strike out a path of their own, do it because they must: who find, perhaps with astonishment, perhaps with regret, that there are more things in heaven and earth than were dreamed of by the builders of the 13th century: who keep to the old as the basis of their work, and where they are obliged to add to it, do so with caution, and, one might say, with reverence.

From which of these two systems have we most to hope? Which finds most promise of issuing at last in a genuine and living modern style? In answering these questions we think that analogy, experience, and probability all point the same way. To begin with the first:—What should we think of a man who set up by himself to invent a new language? Yet this is as much within the compass of a single individual's powers as the creation of a new style. It is just as likely to be accomplished, and just as likely to impose itself on the world when done. But though a project for a new language seems to be beyond the wildest dreams of anybody outside Bedlam, we have heard of projects for new styles and seen samples of them submitted in bricks and mortar for the approval of the public. And though these have not been numerous, there are an abundance of specimens, to be noticed any day, in which the same ambition largely manifests itself. Some of our readers may remember the discussion in these pages of that curious object, the late Strand Music Hall. After all, it was not much worse than many another design of the "all original" type. It only happened to be picked out, in English fashion, as the scapegoat on which all the sins of its class were visited; and even if it did not get more condemnation than it deserved, certainly some equally flagrant offenders got much less. It is difficult to go far in the streets of any large town without coming on examples little less objectionable. Their architects have produced a variation, indeed, from received types, but anything rather than what Mr. Darwin would call an advantageous variation. They have brought together, perhaps, some queer shape of window head, odder and uglier than any one ever ventured to put up: some absurder type of sham-cornice, and some more astonishing combination of notches and chamfers. There is neither beauty nor use in these novelties. They cannot live; they cannot be permanent, or contribute anything to a real modern style, because they have no merit except that of being novelties. No one, it is true, can say that he has seen them before; but no one, it is equally certain, will say that he wishes to see them again. There is no germinating idea in them; they have nothing to develope; they die out with themselves. A whole infinity of such attempts as these would never produce a new type of architecture.

The truth is, neither new styles nor new languages are produced by men setting to work deliberately to make them. They all have their root in the past. Each of them holds the inventions, not of one individual, however gifted, but of multitudes of men for many generations. Their details, if we could trace their history, did not originate in caprice. It was not by mere chance that the smallest feature in them became what it is. Every constituent has been weighed, and tested, and criticised, and its survival is a proof that it once commended itself to universal judgment as the fittest thing for its situation. Circumstances may have changed, and it may be by no means the fittest now; and in that case the problem is to replace it by something fitter, which harmonizes equally well with the rest of the system. If replacing it with a novelty were enough, we might soon have a nineteenth century style in working order. Anybody can produce new forms without much trouble: it is not so easy to make them agree either with each other or with what is old. And yet this is what we must do, if architecture is to advance. We have new materials, and new kinds of construction, and new types of buildings to deal with: we have an old style, which in the main is admirable as far as it goes. We shall be wise to stick to it wherever we can. There are plenty of alterations forced on us, without proposing needless ones in pure gaiety of heart. How to succeed in those that are inevitable is quite enough of a puzzle to employ us all. There is, however, one encouragement in trying to solve it. As long as we keep our old style in view we have a model to imitate,—a nucleus round which our ideas may crystallize. Unlike the "all original" architect, we are not absolutely trying to create a new world out of nothing. And unlike him, each of us is not obliged to attempt the whole work by himself. He *must* do so—for as no one else is familiar with his fancies, no one can contribute anything that will agree with them. But with a distinct and homogeneous style for our basis, each of us may labour in his separate department, and be sure that if his work harmonizes with the original, it will also harmonize with that of others who take the same style for their model. So much for the theory. In examining the architectural productions of the day, the facts, we believe, will be found in accordance with it. The buildings that bear looking at oftenest are not always those that seem at the first glance to have most freshness about them. They are those whose originality does not obtrude itself on the view,—whose cleverness does not lie on the surface. They are those in which difficulties are so thoroughly conquered that one forgets for a time that there ever were any difficulties to conquer: in which it is not so much the novelty of the work as its beauty that makes itself felt: and in which the new is so perfectly harmonized with the old, that one only discovers by thinking about it that there are any new features in the design at all.

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THE BRITISH MUSEUM.

THE British Museum is, or should be, one of the best schools in London. As a public institution, recreatory and instructive, it possesses indeed numerous and special merits, and of its worst abuses, some are about immediately to be removed. It is to be wished, however, that when holiday occasions, such as Christmas or Easter, attract tens of thousands to the great building in Bloomsbury, means could be provided of sending them away more enlightened, or rather, less confused, on the subject of what they have seen. This does not imply that a staff of Polytechnic lecturers should be kept to marshal the people wand in hand through the galleries, for this would be an intolerable nuisance; or that every man, woman, and child staring about the collections should feel as if listening to Sir Roderick Murchison or Professor Faraday; but there might be more life in the exhibition; they should tell their own story more plainly and better. However, the assemblage is a vast and unrivalled one; and few among the multitudes which pass the doors imagine what treasures they have missed seeing. They have bewildered themselves by glimpses of stuffed birds, beasts, and fishes; yet what, for them, the Townley sculptures, or the Phigalean and the Elgin marbles? We leave books out of the question; we even omit bones, elephant skeletons with false teeth, copavaries with artificial necks, birds of Paradise painted in France; but turn to the general whole, and invite the reader to follow us. Now, the entrance is decidedly bad; it presents a handsome appearance, but excludes the light, being too heavily columniated and roofed. This opens into a quadrangle, described by Mr. Granville as "the finest mason's yard in Europe." The ceiling seems always to be falling in; it requires some energy to find the windows; and we may choose between a series of cellars illumined, like kitchen-areas, through excavations in the earth, and a range of rooms above, illumined, like attics, through sky-lights. The "stone-shops," as the sculpture chambers are termed, are still worse. Scarcely an attempt at arrangement exists: priests and princes are in the vaults, and bulls on the first floor. Well, this description, which would apply to the old ramshackle structure originally known as the British Museum, applies exactly also to the present. But, after a preliminary protest, we do not care to dwell upon the imperfections of a national establishment which, after all, contains an immense amount of wealth. A great deal has been done. The Belzoni and the Layard antiquities are better placed; the Blacas gems, though unaccountably locked-up, have a chamber to themselves; the Granville jewels, at last, have been lifted from the floor upon which they had been trodden for years; but where is the Granville bust which used to look down so sadly upon all this confusion? But a very large part of the public, especially the Graces, Muses, and Minervas of modern society, care for none of these things. They are the spoilt children of sweet Σοφια, always contented. And in a great degree they are right. They come to see, and to feel amused, or, if a more dignified term be essential, interested. It is nothing to them that the collections are a grand aggregate of objects suitable to many sympathies; not always identical, yet closely allied; various, but not dissimilar:—

Facies non omnibus una
Nec diversa tamen; qualem decet esse sororum.

The people who, understanding these facts, roam among the galleries, cannot fail to obtain ideas of beauty and grace. Yet from the Museum they must go to a book. They see the superb Parthenon frieze, they catch its splendour at once; but they have afterwards to look for its meaning and history, as the noblest specimen of lithography extant. Otherwise the world opened to their vision here is, and will remain, perfectly unintelligible, a region of hieroglyphics and mysteries; but who can presume to measure the feelings, the intelligence, the tastes, which, in these academies of old times, might not be awakened and developed in the minds of the humblest, had they an easy method of understanding, even to the most moderate extent, the opulence of illustrations placed before them? It is not that the outside populace, on holiday purposes intent, can be expected to study the colossal monuments of antique epochs, of Egypt, Lycia, and Assyria; here are enamelled miniatures and filigree trinkets which, properly examined, would teach lessons of no slight value. Nobody, indeed, can ever pretend, without imposture, to appreciate every object and example which this building holds. It is quite enough for an ordinary ambition, therefore, to have mastered, in one sense, its generalities, and in another, the specialities of a particular class. From the recital of the will of Sir Hans Sloane in the Act of Incorporation, it appears that in addition to books, drawings, and manuscripts, he had gathered together prints, medals, and coins (ancient and modern), seals, cameos and intaglios, mathematical instruments and pictures, stuffed birds, beasts, and fishes, anatomical preparations, reptiles, monsters and abortions, accumulated from all quarters of the globe; and yet amid this medley, which has been increasing year by year, what inestimable cabinets are found!—the Hatchett minerals, the splendid Hamilton volcanic specimens from Mount Vesuvius, few of which are ever inquired after, partly because the populace feels more entertained by the mammoths and beetles, but still more because it cannot grope its way into the crypts which make of the edifice rather a burial place than a museum, rather less cheerful than a cell in Newgate, and much less airy—light being out of the question, as an extravagant luxury. We pass cursorily for the moment the other classes, which are really of importance, though they may be ill located here, and are about to be removed; the mammalia, an exhibition simply of stuffed skins, so crowded that they cannot be seen to advantage, especially the great ruminant and pachydermatous animals, forming altogether a very imperfect representation of their kinds; the birds, not half of which can be seen, and which require six or sevenfold more space for their due exhibition; the reptiles, almost wholly kept out of view; the fish, and so forth. If the public knew how many pages of this huge and rich Bloomsbury book are practically closed against it, a sense of dissatisfaction might justifiably be experienced. It does not seem right, said a good authority a few years ago, that such valuable space should be taken up by Esquimaux dresses, canoes, and hideous feather idols, and broken flints called "rude knives." Each collection is a detriment to the other, and the proper remedy is that one should go. We have suggested in this opening notice that the books in the British Museum need not be brought into question. Still, as a matter concerning both the structure and the public, a few general observations may be allowed. There is an immense amount of utterly valueless and unoriginal American literature occupying shelves which are urgently wanted for other uses. The bulk of modern Scotch theology might well be boiled down to a hundredth of its actual dimensions. There is no reason why, because a volume is published by the vanity of its author, it should become a national archive. How many among the last ten thousand new novels should be allowed a monumental place in the bookcases of the British Museum, usurping so many niches in the forty miles of shelf which its librarians have occasionally boasted about? Why all the editions of Tupper? Why all the editions of Mrs. Caudle's Curtain Lectures? Why the whole of Cumming, or those myriads of petty tomes in stained calf and abraded morocco, which do not belong to literature at all? What is a library? asked the Russian Empress Catherine, of Prince Potomkin. "A book shelf," answered the Prince, "with little volumes at the top, and big ones at the bottom." We shall have better things, however, to say of the Bloomsbury establishment after this first discursive criticism.

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ARTIST-ARCHITECTS.

MR. WYATT PAPWORTH is a bold man, in that, "being convinced that the 'artist-architect' is damaging the profession," he has dared at the present moment to come forward and say so. The statement however, pardoxical as it may appear, is not so devoid of foundation as many of our enthusiastic and over-noisy juniors would affirm it to be, and the question is one well worthy of consideration. That architecture is an art as well as a science, is indeed jealously to be asserted, and we are even prepared to claim the precedence of its artistic above its scientific qualities, were it at all necessary to do so. That is to say, while we look upon building soundly and strongly as the first essential, that may be done, and yet leave building a mere trade, without the slightest pretension to being a fine art at all. To build beautifully is the aim which alone lifts the craft into the higher category of art. But to dabble in what are specially the provinces of the painter and the sculptor has of late been looked upon as what alone can entitle an architect to be considered as an "artist-architect."

It is this notion which we think, with Mr. Papworth, is fraught with considerable danger, and which we fear has arisen out of vanity on the part of a few men in the profession, who fancy they have attainments which distinguish them from their fellows; because, forsooth, they can draw the figure indifferently well, they and they alone are entitled to the high-sounding name they have coined for their own advantage.

We maintain, on the contrary, that architecture in itself is an art, and a very high one, independently of all assistance from the decorator. Supporting Mr. Ruskin in the general tenor of his somewhat too arbitrary dicta, we demur to one which he has often made on this very point. He has asserted that, to take a Gothic doorway with a carved pediment, for instance, all the art in it is in the carving, and that to the designer of the framework of the same no credit is due beyond that of an able but subordinate workman. This is a wholly erroneous view, which has arisen from his taking a part rather than the whole of a building as his example, and cramping his vision accordingly. We fancy we could cull from his description of the Doge's Palace at Venice a string of laudatory adjectives which would be little applicable to the mere dollish figures which lurk amidst the leaves of the capitals of its columns, and which not even his favourite groups of sculpture on the three angles of the building could have the immodesty to appropriate entirely to themselves. Scrape off, in imagination alone if you please, all the sculptures from the mediæval cathedrals—and iconoclasts and revolutionists have done much towards accomplishing in fact the said feat—and is no art left in their mighty and well-proportioned structures?

To draw the figure is well, but it argues no power of invention or design on the part the draughtsman. It is no great credit to him, for not only every architect but every gentleman in the land should do the same, had we our will. To learn to draw is easier than to learn to write, for to form meaningless pot-hooks and hangers is a tedious task, which thousands, who practice it all their lives, never accomplish satisfactorily; but the veriest ploughboy, if set with a pencil in hand to use his wits by drawing what he can see and understand, is interested and made intelligent by the effort, and will, in less months than it would take him years to become a caligraphist, succeed in becoming a tolerable draughtsman. We do not want to know whether the man who reared the picturesque buildings around the precincts of the cathedral of Wells was a proficient in the drawing school of his day; perhaps he was a dunce in that respect by the side of the carver to whom he entrusted the carving of the terminations of the corbels he designed; but he knew how to build beautifully and picturesquely, and therefore was without question an "artist-architect."

It may be a curious archæological question, How intimate were the relations between the sculptor and architect of that grand poem in stone, the west front of that cathedral of Wells? as it is also with regard to the façade and pediment of the Parthenon at Athens. Some men in all ages are intellectual giants, but we need not frame drawing-schools for them. The design that is in them will come out, and they will know whom to direct and how to do so, if they cannot execute every part themselves. We, who are called upon to legislate, must look to the ordinary capacities of men, and to what is practical under present circumstances; and we affirm, without fear of contradiction, that there are ample facilities in the present day for the would-be artist-architects to educate themselves, if they be so inclined. At any rate, there are ten times the opportunities now than have been at the disposal of any previous generation in the world's history; and yet the cry is, while the Art Classes at the Architectural Museum are but scantily attended, for more lectures and more drawing schools; and it strikes us that the cry is as unreasonable as that would be on the part of the famishing Parisians, if they asked us English not to content ourselves with sending them the food we are doing, but to come over and spoon-feed them as well.

It will be time to design the diploma certificate for which so many enterprizing, but, as they would have it, neglected and unappreciated geniuses are clamouring, when half a dozen present themselves annually for those Voluntary Architectural Examinations which the much-maligned Institute has established already.

The last appeal we have noticed—it must be owned with some slight derision—is for a Royal Academy of Architecture. What is in a name? we feel inclined to ask—for what difference there would be between a Royal Academy and a Royal Institute we are at a loss to discover. It seems the proposer of this new scheme sees a panacea for all architectural evils in the appointment of forty high priests out of the ruck of the profession. Why this is the very blot in the escutcheon of the present Royal Academy, and the kindred artistic professions are almost in rebellion against the exclusiveness which in that case can at least plead respectable authority on the score of precedent. This is only another futile attempt to obtain protection, in a day when all systems of protection are doomed. And who, again we ask, is it that seeks such? Simply the incompetent, who fear they cannot achieve for themseves the eminence they would desire. Let their own works speak for them—the proof of a pudding is in the eating; if they are artist-architects, the world will not be slow in appreciating the art they produce. None need fear free-trade but those whose wares are not worth purchasing, or who lack the energy to make good salesmen; and though we may pity them we cannot be expected to establish ourselves, or that the public will establish for us, training schools and hospitals for incapable architects, however well-meaning and artistic they may be. J. P. S.

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The paintings on the walls of Whitecross-street Prison, supposed to be by George Morland, have been damaged and defaced wilfully.

The Brighton Railway Company announce that they will open the portion of the East London line between Deptford-road and the junction with the South London line at the Old Kent-road on March 1st.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE eighteenth lecture of this course was delivered by Dr. G. G. Zerffi, in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. In continuing the subject of Greek sculpture, the lecturer observed that it might be studied from the descriptions of Pausanias, Pliny, and Strabo, and from the numerous copies of Greek works to be found in the different museums. The first mythical period of Greek Sculpture, he said, had commenced with Dædalus, to whom thirteen works were attributed. These were principally busts of Artemis, Aphrodite, and Athene. It was, however, doubtful whether any such person had ever existed. Most probably Dædalus had merely been a common name applied to artists in general. Next Epejos had been mentioned by Homer as the maker of the large wooden horse employed by the Greeks in their stratagem for the taking of Troy. Dibutades, a potter, was set down as the introducer of plastic art in clay. He was said (and the legend was repeated by other writers) to have had a daughter who, having been deeply enamoured of a young man about to go on a journey, was anxious to preserve some memorial of him, and consequently drew his shadow in outline. She produced an excellent likeness, and her father filled in the lines with clay, adding the eyes and marking the hair, and was thus the first to use clay for plastic works. The ornamentation of the pediments of temples was attributed to him. Smilis of Ægina was said to have been contemporary with Dædalus, and was probably also a mythical person. In fact the name Smilis was used generally to designate a sculptor or image-carver. We had historical facts and dates only from 600 B.C. Glaukos, who had been born on the island of Chios, had first worked in metal, which he softened or hardened by fire and water. The stand of a sacrificial vessel, worked by him in bronze, was so celebrated that his name became proverbial for excellence of execution. This was ornamented with reliefs, representing plants and animals, and had resembled a truncated tower in form. Rhœkos and Theodorus had been more distinguished as metal workers. They had constructed the Labyrinth at Lemnos, in which work they were said to have been assisted by Smilis. This building had had 150 columns; to turn them out they had such an excellent mechanism that a boy could set it in motion. Theodorus had prepared the foundations of the Temple of Ephesus, and was said to have cast a figure of Night for the same building. Pliny mentions another statue which had been made by this artist, and which had represented himself. In its right hand it held a file, and in the left a quadriga or chariot with four horses, which latter had been so minute that it was covered by the wing of a fly, also worked in bronze. Though this account might be legendary, it served to show that metal work must have reached a high state of artistic development at that period. Several silver and golden sacrificial vessels, and a golden vine with the grapes made of precious stones, had also been attributed to the same artist, who was further said to have invented the square, the level, the turning-lathe, and the key. He had been the first to lay down theoretical rules for the guidance of future artists in a work on the temple of Hera at Samos. The family of Melas, of Chios, had been the first to work in Parian marble. Bupalos had distinguished himself by making a Tyche for Smyrna, with the Polos on her head and the horn of Amalthea in her hand, creating the model for the future representations of the goddess of fortune. Byzes of Naxos had been the first to cut marble into thin slabs for architectural purposes, and provided marble tiles, with which the temple of Zeus at Olympia had been covered. Cheirisophorus and Bathykles belonged to this period. The former had made an Apollo, said to have been of gold, but which had more probably been of wood covered with thin gold plates. The latter had constructed a throne of Apollo, the reliefs of which showed a kind of symmetry. The back had been ornamented with a chorus of Magnesians. In all, few examples of the style of this period existed. The reliefs from the temple at Assos (now in the Louvre), were unmistakeably in the Assyrian and Egyptian style. Two of the metopes of Selinunt at Palermo were well preserved. On the one, Perseus was represented in the act of slaying Medusa, and on the other Hercules carrying two Kobolds or Kerkopes hanging from a pole. Though in these the execution was coarse and faulty, yet we found in them signs of that dawning power in grouping which distinguished Greek sculpture. The material used was limestone, and the remains of colouring were to be perceived on the seam of Athene's dress. In the Glyptothek at Munich there was the statue of an Apollo, from Tenea, which was in marble, and life-size. The anatomy was perfect, but the mouth grinning, the hair thick and falling in waves on the shoulders, the forehead receding, the eyes wide open, and the nose strongly protruding. This work afforded an example of the Dædalian statues. In the year 1864 a fragment of a Hermes of hymetic marble had been discovered on the eastern side of the Akropolis at Athens. It much resembled the above-mentioned figures in style. In the museum of the Theseus temple at Athens, the tombstone of Aristion, the work of Aristokles, was preserved. The figure was that of a Hoplite, or man in heavy armour. A similar tombstone had been found near Orchomenos in Bœotia. It was of grey marble, and represented a citizen wrapped in a long cloak leaning on his staff, whilst his dog jumps at a locust which he holds in his hand. According to the inscription this was the work of Auxenor of Naxos. A beautiful relief of this period found at Melos was now in the British Museum. It was in terra-cotta, and formed a charming group. We had before us Alkæus the poet, who is deeply in love with Sappho, and who appears to whisper that he wishes to tell her something, but bashfulness prevents him. She seems to reply that if a beautiful and noble feeling inspires him, and if he were not bent on saying something wrong, he would not cast down his eyes ashamed, but would speak boldly. This scene was executed with great truthfulness by the sculptor. Ten statues from Miletus were also in the British Museum. They were all above life size, and had formed an avenue of sculptures lining the sacred road from the harbour to the temple of Apollo. The style was monumental. The hands rested on the knees, the bodies were heavy, shoulders broad, and the forms, especially those of the women, round. Only one statue had a head, the face of which bore the usual broad grin; the ears, however, were well shaped. The upper and under garments were of the usual kind, the former falling in vertical, and the latter in curved and horizontal lines. Having drawn attention to some further examples of the style of this period, the lecturer went on to say that the next epoch commenced when the political life of the Greeks had taken more decided forms, and the social condition of the people had been greatly improved. The seven wise men had begun to influence the masses with their practical philosophy; a spirit of criticism pervaded literature; and epic poetry yielded to lyric. It was consequently not surprising that at this time Art should have been inspired with a new spirit. Passing over Kanachos, after whom we had an Apollo in the British Museum, we came to Ageladas (515 B.C.), who had been the master of the three greatest sculptors of Greece: Phidias, Myron, and Polykletus. Were nothing further recorded concerning him, this alone would be sufficient to render him immortal. At Argos, where he lived, he had founded a special school. Two of his works representing Zeus as boy and as man were worthy of praise. Both Ageladas and Onatas had worked principally in bronze, with great power. Onatas had been celebrated for having wrought the Demeter Melæna near Phigalia in bronze, which replaced the old wooden image which had been destroyed by fire. Not less excellent had been his Herakles, ten yards in height. The Demeter just mentioned was the only female figure attributed to him, he having confined himself to the representation of heroes; he also excelled in reproducing horses. Turning to Athens, we had Antenor, who made the statues of Harmodius and Aristogeiton. This group had been taken away by Xerxes (480 B.C.), and a new one had afterwards been sculptured by Kritios and Nesiotes. We might find fault with the stiffness of the execution, which was too faithful to be really beautiful, but the composition was full of life and the arrangement masterly. We were better able to judge the artists of Ægina of this period, as we possessed from the pediment of the temple of Minerva two groups, which had been restored by Thorvaldsen and were now in the Glyptothek at Munich. Of the western group ten of the statues were perfect, the eleventh much damaged. Of the eastern group five statues only were in good condition. Of the former Onakas had probably been the artist, but the latter was so superior that it must be assumed to have been the work of another artist. It was attributed to Kallon. The productions of Kalamis, Myron, &c., will form the subject of the next lecture.

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MOORE'S PATENT WATER-PIPE PROTECTOR.

THE unwelcome visit of the plumber to stop the too liberal water supply in our houses has been an incident of unpleasantly frequent occurrence during the late severe frosts. An arrangement has been recently patented under the above title for the prevention of this domestic nuisance. Certain valves and cocks are connected with the pipes, which, that they may be *self-acting*, are weighted in such a manner that when left to themselves and unsupported, they immediately shut off the supply of water and empty the pipes. They are prevented from doing this in ordinary weather by being suspended from a small tube of glass containing water, and specially manufactured for the purpose. As soon as a sharp frost occurs it attacks this glass tube, the water within which quickly becoming frozen, expands and bursts the tube. The weighted valves and cocks thus losing their support immediately fall, shut off the water supply, and empty the pipes. The frost thus becomes the active protecting power of the pipes, instead of as heretofore being the cause of injury to them. The apparatus cannot fail, it allows water to be easily obtained from the pipes during the continuance of the frost, and on its cessation the trifling cost of the renewal of the glass tube again effectually guards against the enemy. The apparatus is manufactured by Messrs. Guest & Chrimes, of Rotherham, and may be obtained in London of their agent, Mr. Thomas Beggs, 37, Southampton-street, Strand.

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BUILDING NEWS SKETCH BOOK.

THE "Sketch Book" series is now finished, and we beg to tender our thanks to the many gentlemen who have contributed to it, and also to the equally large number who have sent sketches which have not appeared. Had many sketches which have not appeared been sent in earlier, they would have been substituted for others which have been published. We shall defer making any observations on the merits and demerits of the sketches till the awards of the adjudicators are given. The prizes are £10 10s. for the best drawing; £7 7s. for the second; and £5 5s. for the third. The contributors are to be the adjudicators, as mentioned in No. 756, July 2, 1869. We then said—"In order that there may be no complaint of unfairness in the award of the prizes, we propose that the contributors shall decide for themselves; each contributor to have three votes, or a vote in the awarding of each prize, but no contributor shall be eligible to vote for himself. The author of the sketch who has the most votes will have the first prize, the author who has next to the most will have the second prize, and the one who has the least number of votes will have the third prize." We now await the decisions of the umpires, and shall be glad to receive them as soon as possible. Should any two contributors have an equal number of votes, Mr. J. P. Seddon, the Hon. Sec. of the Institute, has consented to act as arbitrator and give a casting vote. We should have said that fifty-nine sketches have appeared, which, with the frontispiece, kindly contributed by Mr. P. Auld, will make sixty.

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LAXTON'S PRICE BOOK FOR 1871.

LAXTON'S has *always* been recognised as *the* Price Book, not only by the trade, but by the various Law Courts, by whom reference to it is always made as the acknowledged standard. Its fifty-fourth edition is published by Messrs. Kelly & Co., who have thoroughly revised and re-arranged it, and made many useful additions. The issues for the past few years have hardly sustained the character of the book, but the trouble at which its present publishers have been to more than restore it to its old position cannot fail to be appreciated. The contents comprise over 72,000 prices of various materials, carefully corrected according to present rates and wages, together with a variety of other useful information,

NATURE IN ORNAMENTATION.*

SAVAGES use generally only geometrical figures in the ornamentation of their vessels, weapons, oars, clubs, cross-beams, or door-posts. The triangle, the square, the circle are applied in a thousand different forms, windings, and combinations. As soon as man frees himself from the savage state he takes his motives for ornamentation from the vegetable kingdom. Plants and flowers have formed for the last six or seven thousand years one of the principal elements of ornamentation. We may trace two different methods in the use of the types of organic nature by ornamental artists. There are some who regard as paramount only the ornamentation of their work; they use the vegetable forms as means to attain an aim. The vegetable products are either changed or transformed, just as the ornamentalist thinks it best fit for his purpose. Above all, he observes symmetry and order as the two essential elements of ornamentation. This artist raises himself above Nature. Her products are used by his intellectual powers at his will. This method of handling the products of the vegetable, or even animal kingdom, according to the imagination and intentions of the artist, produces "style," which often has varied, as may be studied in the history of art. There are others who altogether disregard the object which they intend to ornament. They have only one aim, which they strive to attain—a correct, faithful, and most accurate imitation of the organic products of nature. They delight in reproducing the defects, deformities, and peculiarities caused in plants by wind, frost, or rain. A dew-drop on a rose, a worm-eaten leaf of a tulip, are the very highest aspirations of these so-called "naturalists," who have a tendency to use nature in her unadulterated condition for ornamental purposes. Art with these men becomes subservient to Nature, which is, in itself, contrary to all principles of art. If ornamentation does not grow out of the very character and form of the work to be ornamented, it is in itself a nonentity. But Nature with them is everything. What could there be more beautiful than Nature? These artists do not see that Nature is beautiful in adorning a prairie with a variety of flowers, but that if those flowers are transferred on a frieze, or on the legs of a table, a plate, or carpet, or the paper covering the walls of a dining or drawing-room, the ornamentation becomes altogether out of place and order. We come, therefore, to the conclusion that forms and products of Nature can only be used for ornamentation under the regulation of a correct style. The naturalist turns into an imitating, or rather mimicking, slave of Nature, and is incapable of doing justice to the requirements of art. The artist, with a style of his own, frees himself, above all, of Nature. He takes her forms, sifts them, and uses them according to the faculty of his imagination, but detaches them from their connection with Nature, and elevates them to real products of art. Thus only he is enabled to fulfil all the conditions with regard to colour, form, arrangement, and distribution over space, in strict harmony with the object he intends to ornament. To bring plants into conventional forms was the tendency of all good ornamentation from time immemorial. It is a curious fact in the historical development of ornamentation, that the more we trace back our steps in the investigation of ornamented works of art, we find the conventional treatment of plants and animals practised. One would suppose that a close imitation of the forms of Nature ought to have been the first natural impulse of man; but this is not the case; on the contrary, whether we look on Assyrian or Egyptian ornamentation, we find that a conventional treatment of the forms of Nature was universal; and only a modern school of ornamentalists tries to bring decorative art, by a slavish imitation of Nature, to a kind of conclusion, and to bar the way to further original forms and combinations. Though the conventional treatment of natural products has been the basis of good and correct ornamentation, the very treatment of the types of Nature has varied in different countries at different times. This is the reason that we see in the history of ornamental art an everlasting change, which is the more interesting as it is not so much the result of the individual artist's will, as rather the characteristic peculiarity of some settled style, which in its turn is the effect of the national sentiment—the tendencies of a period and the degree of taste in art at a certain epoch of the life of a whole nation. As a proof of this statement, we have, above all, Egyptian art; we certainly know it only when already highly developed. The Egyptian art had not been altogether the product of pure artistic motives; it was not an unfettered art, devoted to the laws of beauty alone, subordinating everything to higher aspirations. Egyptian art was the faithful servant of religion; symbolism was its element. Symbolism chose for the artist the special plants which he had to use for ornamentation. Though symbolism went so far as this, the manner of the reproduction and combination of certain plants was still left to the free will of the artist, and therein the Egyptian products of art deserve our careful study. The elements of Egyptian ornamentation are exclusively the lotus and the papyrus, to which we must add the palm tree. Symbolism meant by these forms to teach the masses that body and intellect ought to have their proper nourishment. In looking at the ornamental reproduction of these plants in Egyptian art, we find that though they resemble their originals they are anything but what Nature has produced. Deprived of all special individuality, the plants are brought into a regular symmetrical form; all their details, as the bud, the stem, and the flower, are generalized. The plants may be united in rows; if so, they are arranged eurithmically, in double rows, with alternating higher and lower plants; or in fan-like radiation, to a certain degree repeating the form of the single flower. Flowers are sometimes represented as rising from the water. In those instances they rise regularly, at well measured distances, with a perfectly similar form and growth. The waves themselves assume symmetrical and uniform lines. Kings presenting plants to one of their divinities as a grateful offering, hold them not in the natural shape in their hands, but in the usual conventional, artistically remodelled form. The ornamentalist was guided in such cases by a correct feeling, for had he made the plants in these isolated instances in accordance with their natural forms, he would have produced a striking discord; and this he carefully avoided. But how did it come that the Egyptian artist has deviated with such correct feeling from what he saw in Nature? It could not have been a mere fancy, which originated in nothing, that developed itself into a national style and continued as such for thousands of years. The Egyptian must have observed in Nature law and symmetry, according to which he regulated his own existence, submitting to them also his productions of art. Nature taught him to make himself acquainted with general types of certain plants, and to disregard the individualisation of the single plant—and he did so. By this means of generalization, he learnt that there are laws in Nature under which you may bring the plant with its outlines, the formation of its flower or fruit; he must have observed that the same law ruled the relation of the leaves to the stem; that certain principal lines and outlines all spread regularly from one central point. He took thus nature in her symmetrical perfection as a model, freeing her from all accidental inaccuracies or deviation; and this perfection with its immutable order turned out to be to him the very law of art. Placing thus the plant in profile, arranging the flower and the stem as two connected totals, distributing the lines to the right and the left in symmetrical order, he did not altogether lose the basis of Nature; he only idealised Nature. There is scarcely a style in which the right principles of correct ornamentation are so well expressed as in the Egyptian. The types of the plants are the result of a keen observation of Nature. By the great severity of his customs the Egyptian artist was hindered from cultivating a freer mode of combination, and the symbolism to which he was subjected forced him to be contented with a few plants. Nature, however, is inexhaustible in her products which may serve, if properly understood and carefully adapted, for ornamental motives. The Assyrians and Persians appear to have had some older style which they copied; and there is to be observed a kind of settled and inherited conventionalism in their motives of ornamentation. Nature appears scarcely recognisable in their decorative forms; but they were less fettered by symbolism than the Egyptians, and we may trace some new motives in their works of art. The flowers are not represented in profile but in full; we have with them the use of rosettes, which have been adopted probably later by the Egyptians too, though with them the origin is much more of a geometrical character than with the Assyrians or Persians, who apparently worked from nature.

In my next I intend to consider Nature in ornamentation with the Greeks.

G. G. ZERFFI.

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* See JULIUS SCHORR'S "Gewerbehalle;" No. 1, 1871. Stuttgart: Engelhorn; London: A Siegle, 110, Leadenhall-street.

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CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

ON LIMES AND CEMENTS.

AT the last meeting of this Society, on the 3rd inst., Mr. J. B. Walton, A.I.C.E., President, in the chair, two papers on this subject were read, the authors being Messrs. R. M. Bancroft and H. E. Hunt. We give abstracts of each: —

MR. BANCROFT'S PAPER.

The author commenced by pointing out that calcium is the metallic basis of all limes. Rich limes are yielded by limestones containing from 1 to 6 per cent. of foreign substances, such as silica (flint), alumina (clay), magnesia, iron, &c. Soft chalk, hard ragstone, or marble yield equally good lime, since the calcium they contain is the same mineral. Chalk, however, generally contains water irregularly distributed, and not exhibiting the same change that marble or stone does; it is frequently unequally burned, and therefore slakes imperfectly. The purer the lime the finer should be the quality of the sand, the pure limes requiring finer, and the cements a coarser sand than the hydraulic limes. Poor limes are those which either do not increase in bulk, or only do so to a trifling extent, when slaked. They are all obtained from limestones which contain silica, magnesia, manganese, or metallic oxides; these foreign substances are present in poor limes to the extent of from 15 to 30 per cent. They do not slake freely, and are liable to vitrify in burning. Limes from limestones containing much silica swell in setting, and may dislocate the masonry executed with them. If alumina be in excess the lime is likely to shrink and crack. If carbonate of magnesia be combined with carbonate of lime, as is the case in magnesian limestones, the original bulk is retained. All limes which fall short of from 10 to 18 per cent. of clay should be rejected. Grey limes from the Medway containing about 18 per cent. of clay make good mortar. The blue lias stones have long been reputed to be the best of all English limestones. They are mostly found in the British Channel, at or near Watchet, in Somersetshire, at Aberthaw (near Cardiff), and at Lyme Regis and Barrow. Blue lias is a limestone particularly serviceable for concrete and all works connected with water. Greystone lime—the lime principally used in the buildings of the present day—is simply limestone burnt in a kiln, as chalk is burnt. It is to be obtained either ground or in the lump, the ground lime being used for concrete. About 1s. 6d. per yard of eighteen bushels is usually paid for grinding. The same object could be attained by simply slaking instead of grinding. Chalk-lime mortar requires two parts of lime to three of sand, and is chiefly used for plasterers' work. It is mixed with cow-hair, and put on in one or two coats, and finished with a thin coat of lime, thoroughly run down and reduced to a pulp, technically called "fine stuff." In damp situations or trenches not well drained, if chalk lime is used in making concrete the concrete will never set, and if there is any running water in course of time all lime gets washed out of the ballast and dissolved away. Chalk lime never should be used in damp situations. The author next proceeded to speak of mortar, and deprecated the entrusting its mixture to mere labourers. He also insisted upon more time being allowed for the mortar in new work to get hard before piling upon it any great weight of superstructure. In work hurriedly run up nothing was so common as to see settlements and cracks arising solely from the compression of the mortar before it had had time to harden. In making mortar, from seven to three parts of lime of the ordinary sort are usually mixed with two parts of sand—the stronger the lime the more sand it will take, and the more sand used the slower, as a rule, will be the setting, but the harder the mortar. The hardness of the limestone from which the lime was produced has nothing to do with the hardness of the mortar; it is its chemical composition which regulates the quality of the mortar. Lime should be used as fresh and stiff as possible, and the bricks or stone should be well wetted with water, particularly in hot weather. It is important that all water used for making mortar or cements should be free from all impurities of vegetable and organic matter. With regard to hydraulic limes, the admixture of pulverised *forge scales*, or iron dross, with calcareous matter makes a very strong hydraulic mortar. The Dorking, Marsham, and Halling limes are largely used as hydraulic cements. A good mortar may be made of three measures of sand, and one measure of Dorking or Halling lime. Blue lias stone lime requires twice its measure of sand. A measure of lime is 27 cubic feet, and it contains 21 striked bushels. Keene's cement is capable of being worked to a very hard and beautiful surface. It is obtained by soaking the plaster in alum water after a first calcination, it is then put a second time into the kiln, re-burnt, and ground. Parian cement, like Keene's, also has a plaster base, the gypsum being mixed with borax in powder, and the mixture is calcined and subsequently ground. Scagliola is made of plaster of Paris and different earthy colours, which are mixed in a trough in a moist state, and blended together until the required effect is produced, when the composition is taken from the trough, laid on the plaster ground, and well worked into it with a wooden beater and a small gauging trowel. When quite hard, it is smoothed, scraped, and polished, until it has the appearance of marble. Plaster of Paris is used for cornices and internal decorations, and is the base of all the internal decorative cements known as Keene's, Parian, Martin's &c. It is partly soluble in water, and therefore unsuitable for any but inside work. Stucco is plaster and lime mixed together. It is generally made of lime, mixed with calcareous powder, chalk, plaster, and different other substances, in such a manner as to obtain in a short time a solid surface. Bastard stucco is a three-coated plaster—the first generally "roughing in" or "rendering," the second "floating," as in trowelled stucco; but the finishing coat contains a little hair besides the sand. It is not hand-floated, and the trowelling is done with less labour than in what is called trowelled stucco. In stucco for external purposes such materials only should be used as are capable of resisting the action of wet. Rough stucco is a mode of finishing staircases, passages, &c., in imitation of stone. It is mixed with a large proportion of sand, and that of a coarser quality than trowelled stucco, and is not smoothed, but left rough from the hand float, which is covered with a piece of felt to raise the grit of the sand, and so give the work the appearance of stone. Pozzolanos are principally composed of silica and alumina with a little lime in combination, mixed with potash, soda, magnesia, and oxide of iron.

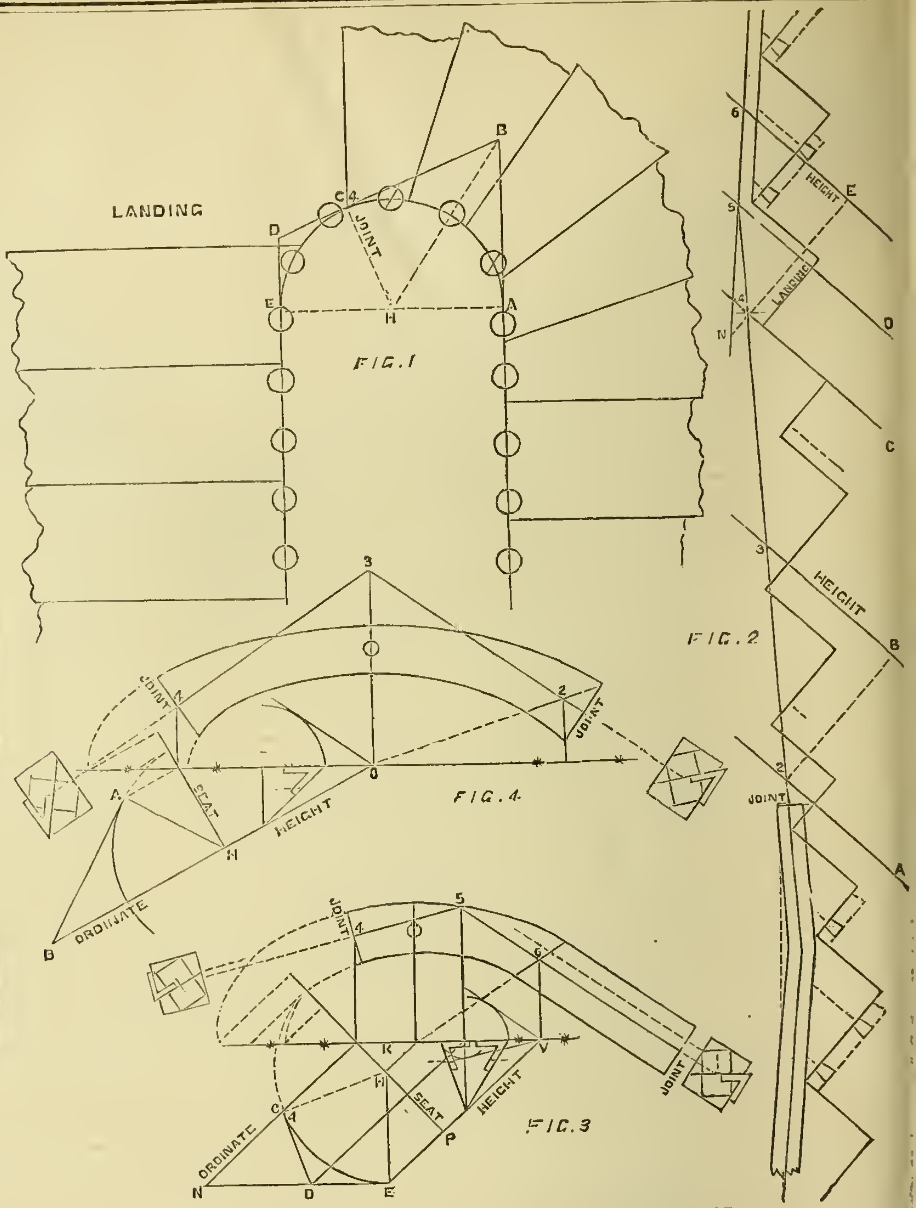
MR. HUNT'S PAPER.

Mr. HUNT commenced his paper by a reference to the causes which act in giving some limes the power of setting under water. He observed that Smeaton, when engaged in the construction of the Eddystone lighthouse, found that all limes that set under water were obtained from the calcination of limestones which contained a portion of clay in their composition, and his experiments led him to use a cement composed of Aberthaw lime and of Pozzolano. That Smeaton was right in the selection of his stones was almost certain, though perhaps he did not quite recognise the important part which the presence of clay (or silica and alumina in chemical combination) had in the result which he obtained. Referring to some tables exhibited on the walls, containing analyses of the best hydraulic limes, Mr. Hunt observed that such limes almost all possessed the same bodies, though in varied proportions. Limestones or calcareous stones (or those stones containing carbonate of lime) are of very various natures. There are, for instance, pure carbonates of lime (some of which are perfectly crystalline, as marbles), and others which contain, in addition to the carbonate of lime, magnesia, oxide of iron, manganese, silica, and alumina. The name limestone is generally applied to those stones containing at least 50 per cent. of carbonate of lime. A mere chemical analysis of a sample does not always give the results that are obtained by practice. Experience alone is the best guide in this matter. The existence of carbonate of lime in stones is easily detected by the application of dilute nitric or muriatic acid; by the effervescence which takes place, caused by the escape of the carbonic acid gas from the carbonate of lime, pure lime is left behind. The next most important substance which enters into the composition of limestones is silica, which exists very nearly in a state of purity in flints, common quartz, agate, &c. It is not sensibly soluble in water or dilute acid, but dissolves freely in alkaline solutions at a temperature of from 300° to 400° Fahrenheit. The next and last substance that plays any important part in limestones is alumina, which is recognisable in the form of common clay, but not then in a pure state, but in chemical combination with silica. None of the other bodies, except magnesia, are of any value as regards the hydraulicity of the lime. Chemical analysis shows that the stones which contain only from 1 to 6 per cent. of silica, alumina, magnesia, iron, &c., either separately or in combination, give rich limes upon being burnt. Limestones containing insoluble silica in the shape of sand, magnesia, oxides of iron, and manganese, but limited to between 15 and 30 per cent. of the whole mass, yield poor limes. Limestones containing silica in combination with alumina, magnesia, and traces of oxide of iron and manganese in various respective proportions, but within the limits of from 8 to 12 per cent. of the whole mass, yield moderately hydraulic lines. When the foregoing ingredients are present in the proportion of from 15 to 18 per cent., but the silica in its soluble form, the limestones yield an hydraulic lime. When the limestone contains more than 20 and up to 30 per cent. of these ingredients, an eminently hydraulic lime is yielded. Limes owe their hydraulicity to the presence of a certain quantity of clay, and sometimes, though rarely, to that of a certain quantity of soluble silica. It is supposed that during the calcination, silicates of lime and alumina are formed, with an excess of lime; these, in slaking, absorb a quantity of water, and solidify in combining therewith, and the double salt being insoluble in water, the compound remains therein without decomposing, or at least only yields that small excess of lime which might have existed in the combination. Rich limes are the purest limes we possess, and the purer the carbonate of lime from which they are obtained, the more distinct are the appearances from which they take their name. These are that they augment in volume to twice their original bulk (or more) when slaked in the usual manner. If employed by themselves without any admixture of foreign substances, their consistency is the same after many years of immersion as on the first day. Poor limes do not augment in bulk at all, or only do so to a very trifling extent when slaked. They do not harden under water more than rich limes, and are acted upon by that agent in nearly the same manner. The middlingly-hydraulic limes set under water after from 15 to 20 days' immersion, and continue to harden for some time afterwards, but the progress of their hardening diminishes after the sixth or eighth month; after a year their consistence is equal to that of dry soap. The change of bulk they undergo in slaking is about the same as that of the poor limes. Hydraulic limes set after from six to eight days' immersion, and continue to harden; the process of solidification may extend over twelve months, although the greater part is completed by the end of the first six Eminently hydraulic limes set within the third or fourth day of their immersion. After a month they are quite hard, and capable of resisting the dissolvent action of running water. No limestones are capable of producing in a commercially valuable form hydraulic limes unless silica be present in combination with alumina. All experiments go to show that, in the proportions cited, it is the most efficient agent in producing the hydraulicity. Mr. Hunt next proceed to speak of the calcination of limes, after which he enumerated and described some of the best known hydraulic limes of the country. Firstly he named the Aberthaw lime, the chemical analysis of which is as follows:—Carbonate of lime, 72·91; alumina, 7·18; silica, 10·74; oxide of iron, 1·77; moisture, &c., 7·40 = 100·00. The best proportions for hydraulic mortar are from 2 to 3 parts of sharp sand to 1 of lime. If the lime be used for concrete, 6 parts of shingle, or even more, may be used. When the lime is used for concrete under water it should be mixed up for some hours prior to its being placed in the foundations. It usually requires a day to be set under water. This lime was used by Smeaton for the Eddystone lighthouse. The price, delivered in London, is 22s. 6d. per ton. Another powerful hydraulic lime is that made from the Halkin Mountain limestone, and which was exclusively used by Jesse Hartley, in the construction of the Liverpool docks. The analysis of this limestone is: Silicia, 21·56; carbonate of magnesia, ·80; alumina, 1·16; oxide of iron, ·50; carbonate of lime, 72·60; water, &c., 3·38 = 100·00. This lime has very great power of setting under water. In rubble masonry and backing up for dock walls, the proportions are: 1 part lime, 2 of sand, and ¼ of smithy ashes, ground for twenty minutes. The best mortar for foundations, sewer bottoms, pointing, &c., is made up of 1 part of lime, ¾ of sand, and ¼ of ashes, ground forty minutes. The most extensively used hydraulic lime of all, however, is the blue lias. Its chemical analysis is: Lime, 45·50; alumina and silica, 18·50; carbonic acid, 31·50; water, 4·5; = 100·00. The best quality in this large bed is to be obtained from the quarries in Warwick. The best proportions of lime to gravel for concrete are 6 to 1 if the gravel is good, and in ordinary weather; for mortar, 2 or 2½ to 1. The mortar is not of itself sufficiently hydraulic to set under water, but if allowed to remain for 24 hours, the water has no effect upon it whatever. In conclusion, Mr. Hunt dealt with the manufacture and use of cements, and entered into the question of the relative strengths of the different varieties.

DISCUSSION.

In the discussion which followed the reading of Messrs. Bancroft and Hunt's papers,

Mr. C. H. WHITAKER, who had conducted a large series of Government experiments for Mr. Grant, exhibited some very interesting tabular diagrams, and gave to the meeting an explanation of the objects sought to be attained in each experiment, and the mode of conducting them, with the deductions he had arrived at from the results obtained. Mr. Whitaker said that Mr. Grant's tables (published in the "Minutes of the Proceedings of the Institution of Civil Engineers") showed that the tests of strength of neat cement and of cement and sand proceeded very regularly and in the same increasing ratio from one day to one year or more. At from one to two years, Portland cement appeared to attain its maximum strength, at which it continued to remain without either increase or diminution. Portland cement gauged in a mortar-mill for half an hour with the expectation of a higher result than from ordinary hand-gauging (on account of the more probable intimacy of the mixture of the cement and water) showed the cement, however, to set hard, but very brittle, the highest test being less than half that of the same cement gauged at the same time by hand. Mr. Whitaker suggested to Portland cement manufacturers whether it would not be possible to make cement of two different qualities—the one such as we know, hard, and capable of great sustained pressure, like cast-iron, for instance; the other not, perhaps, capable of bearing so high a test of the ordinary kind as the first, but, being of a somewhat elastic nature, able to sustain a sudden blow (as wrought-iron), such as the impact of a wave; and, further, whether it was not probable that cement of this kind (though according to the present system of testing not so good) would be better suited to marine works, breakwaters, and similar structures. With regard to the adhesive power of different kinds of bricks with cement, those bricks whose porosity was the greatest were (as might be imagined) as a general rule found to hold the cement best. Stock bricks undoubtedly had the greatest power of adhesion to cement, but being more friable, broke at a point lower than that arrived at with some of the denser bricks, such as the Suffolks, Fareham reds, &c., one brick of either of which sort would readily absorb 1lb. of water. In each of these cases it was the brick itself which most often gave way, particularly the stocks. But as it was the *bricks* and not the *joints* which were broken and registered when this kind of fracture occurred, the relative adhesive value of each was not obtained, though it appeared to him most probable and most reasonable that the stocks would stand highest. There was no better brick for making sound work, especially in water-work, underground, or in damp situations. The experiments he had conducted tended to show that the stock-bricks bedded in cement set 18 per cent. stronger in water than in air, whilst all the other kinds, except some of the Galt bricks, set better in air than in water. He was not able to give the meeting any information as to the setting of *limes in water;* but a mortar composed of one part of blue lias or Dorking lime, and two parts of sand, seemed to be of about an equal strength with Portland cement compo made in the proportion of three to one. With regard to different kinds of Portland cement concrete, various materials had been tried, as broken glass, flints, pottery, Portland stone, and granite, as well as ordinary river ballast. The blocks were made of two different sizes, viz., 12in. cubes, and 6in. cubes, one set of each being kept in water and another set in air for one year, when they were tested by crushing in a hydraulic press. The Portland stone concrete gave uniformly the highest results, that made in the proportion of 6 to 1 breaking at a pressure of nearly 1 ton per square inch. The sharp angular pottery and broken flints were the next highest in the scale. The granite did not come out so well, and the ballast showed the lowest breaking strain of all, giving an average test (at 6 to 1) of about 0·60 ton per square inch. The broken Portland stone appeared to be completely incorporated with the Portland cement, the whole becoming one homogeneous mass, the stones not tearing away from the cement when broken, but the entire block crushing together through stones and cement alike. The rough biscuit-like edges of the broken pottery gave to that material a similar character to the Portland stone, though in a less degree; and the sharp angularities of the flints, with their rough calcareous portions, gave to the concrete made with them the strength it was found to possess. The granite concrete appeared to have a tendency to crumble somewhat, and the round pebbly nature of the ballast giving the cement less hold on the particles of stone seemed to be the cause of its sustaining a less load than the other concretes experimented upon. Of a large number of tests of ballast concrete (being that most generally used), the strength varied most uniformly, according to the proportion of cement employed. One interesting fact which came out was that the larger cubes (12in.) set in water stood a greater weight than those set in air, but the small blocks (6in.) were stronger set in air than in water. It was suggested that concrete made dense by compression would stand a greater pressure than that made in the ordinary way. With this view duplicate sets were made similar to the others in every respect, with the exception that the materials were rammed into the moulds by hand-beating with a mallet, getting thereby more material into a cubic foot than when only thrown in and left to settle in the ordinary manner. The result showed that these blocks formed by compression broke at an average of 30 per cent. greater strain than ordinary concrete, leading one to infer that, could a still greater pressure be applied, and greater density thereby obtained, a still higher result would follow. Mr. Whitaker said that Portland cement was undoubtedly the best for joints in any case, but that in tide-work, or where only a short time elapsed between the bedding of the bricks or stones employed, it was a good plan to strike the Portland cement joints as usual, and then point them on their extreme outside with a thin layer of Roman cement, which, setting immediately, would protect the Portland cement joint until it was completely set and needed no further aid from the Roman cement, which might wash off at leisure. Mr. Haughton, Mr. Williams, Mr. G. Eades Eachus, Mr. Meakin, and others having taken part in the discussion, Messrs. Bancroft and Hunt briefly replied, and the meeting adjourned.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXII.

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NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 108.)

Plate 22.—Construction of Wreath for Stairs having Winders, Quarter Landing, and Square Steps.

The upper part of wreath forms its own ramp.

Fig. 1. This plan exhibits joint thrown from centre, making tangents A, B, C, D, E which form acute and obtuse angles. Centre line of rail struck with radius of nine inches.

Fig. 2 shows tangents, winders, and square steps, spread out. Letters along margin correspond with those on plan.

Commence, as usual, by letting under side of rail rest on square steps.

Set off half its thickness, cutting through 5 on upper part. Then 5 is a fixed point and stands over D on plan.

We now want pitch over the winders, which must be drawn in such a manner as to make a proper ramp. Assume 5.2. This makes lower part of wreath have equal pitches. When such is the case, one-half the height is sufficient for construction of mould. For example: Square over 2 B. Then B 3 gives it.

Height for upper piece of wreath is obtained by drawing through joint 4, cutting at E, giving E 6. The direction of ordinate being E N.

Transfer this to Fig. 3, where correspondin letters are shown. Square over E H. Let thi equal E H on plan. Make tangents E, D, C agre with those on Fig. 1.

Draw ordinate through C. Make the seat squar with it. Draw lines from D and E parallel wit ordinate. Make P V, the height, equal that o E 6, on the right. Join V K extended. This i the pitch, and the major axis.

Find the length of elliptic curves; also point to insert pins for striking mould.

See that 4, 5, 6 agree with corresponding figure on pitches to the right. The straight shank o wreath may be any length desired. The dotte line from corner of rail and on surface plank show the slab that must be cut off, according to bevel

Fig. 4 is the mould for lower piece of wreat It has been stated that when pitches are equal, an tangents on ground plan make a right angle, the the ordinate is always the diagonal of a square.

Here the tangents on plan show the acute angl meeting at B. Then the sides give the right angl A H and C H. Join H B, and we have the ord nate.

This makes the construction very simple.

Commence at Fig. 4, by drawing a line in an direction; say that marked "Ordinate and height. Let B H agree with similar letters on pla Square over the seat from H. Draw curve t equal that on plan. Have B A agree with A B o plan. Draw from A to cut seat, and parallel wit ordinate. Let H O, height, equal that of B 3 o right. Draw from intersection of seat through and we have pitch and major axis.

Find length of elliptic curves, as usual.

The drawing is now ready to strike the moul Its tangents are 2, 3, 4, and must equal corr sponding figures on the right.

The pitches here being equal, one bevel answe for both joints.

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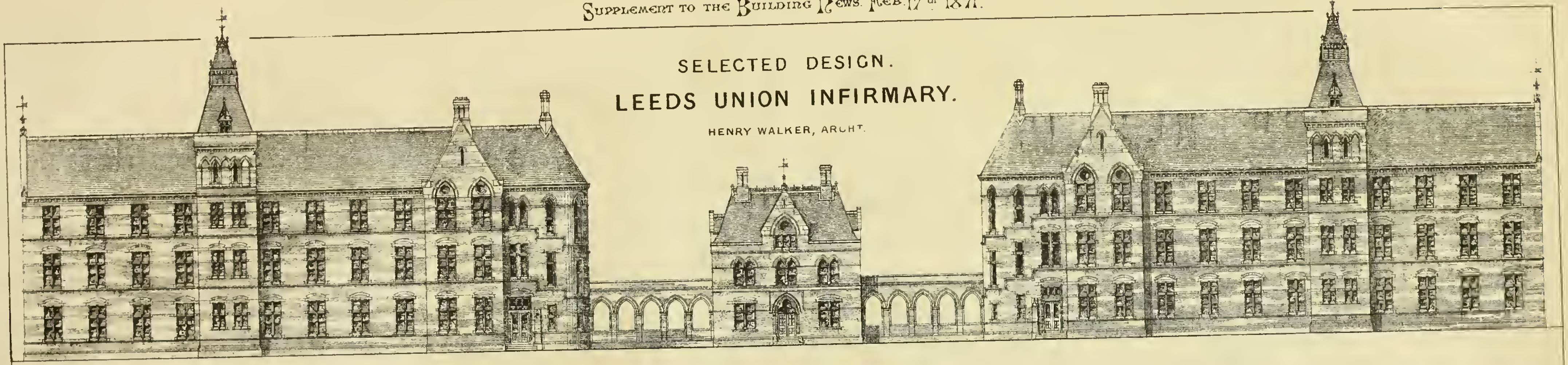
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

SUPPLEMENT TO THE BUILDING NEWS. FEB. 17th 1871.

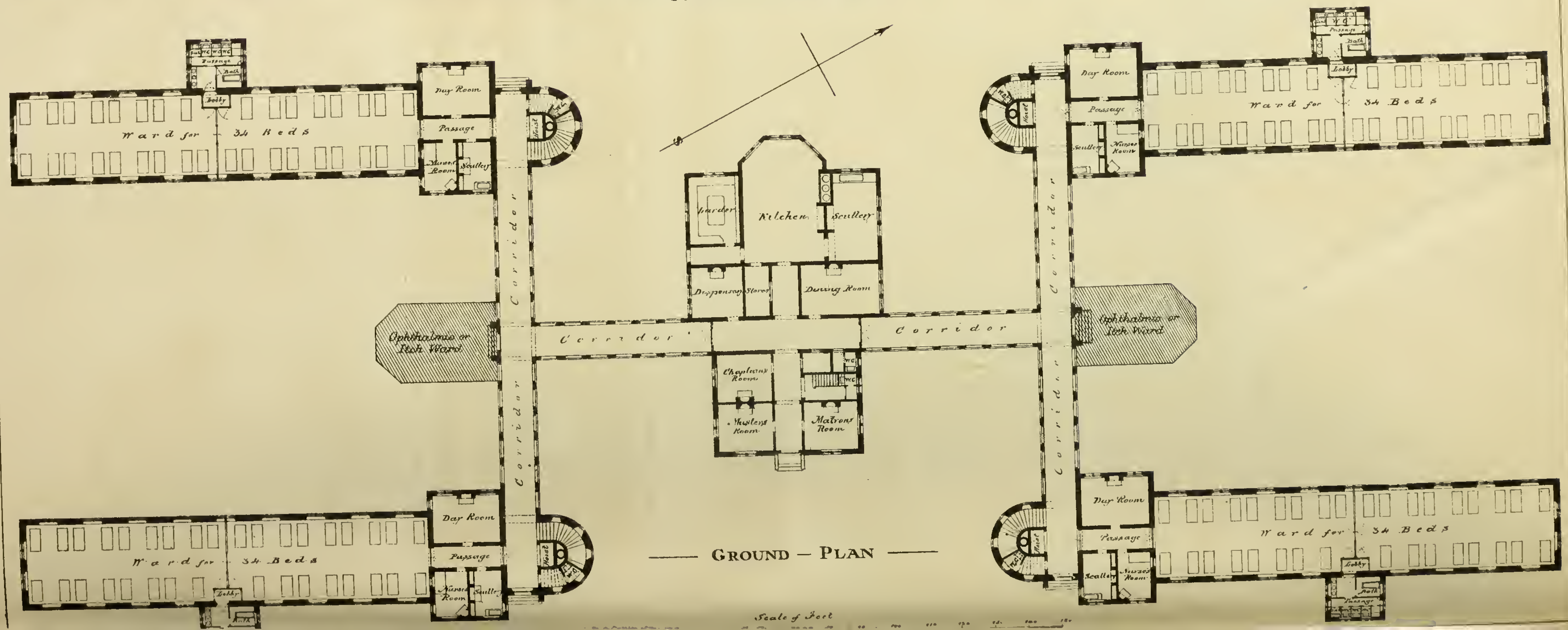
SELECTED DESIGN.

LEEDS UNION INFIRMARY.

HENRY WALKER, ARCHT.

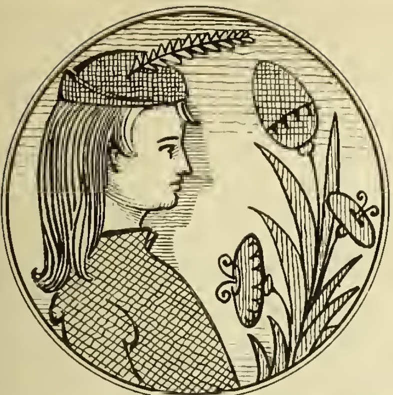


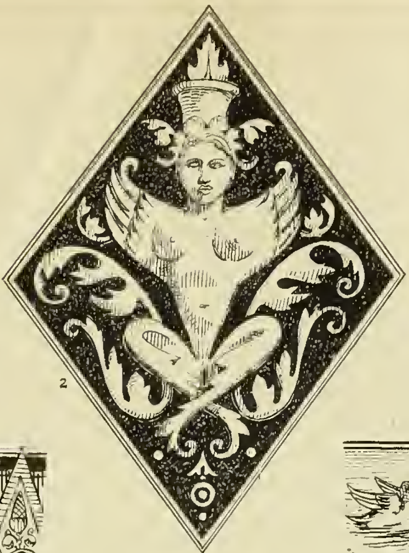
— FRONT — ELEVATION. —



— GROUND — PLAN —

Supplement to the Building News. Feb. 17th 1871.





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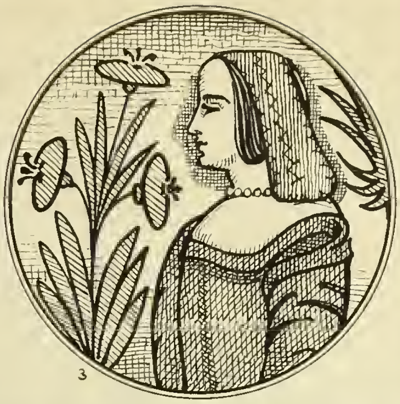

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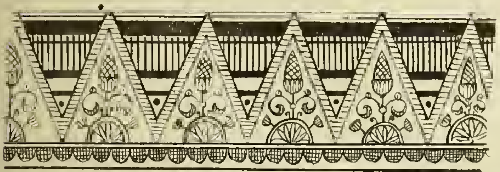

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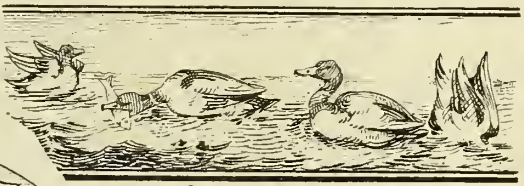

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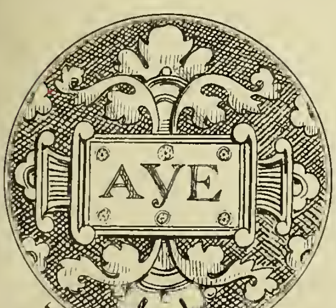

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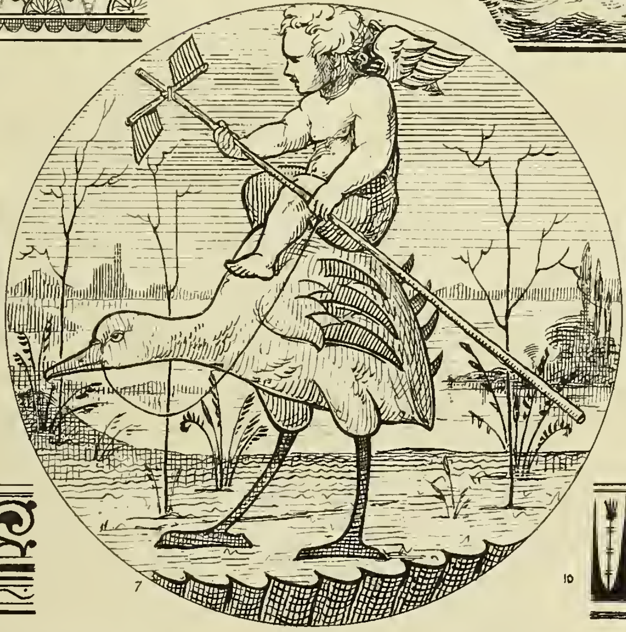

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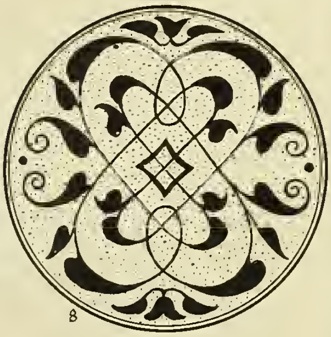

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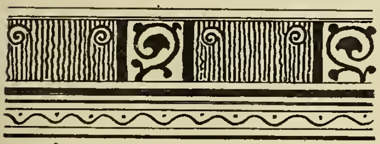

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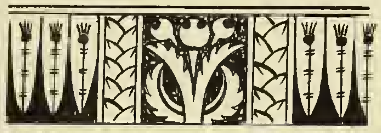

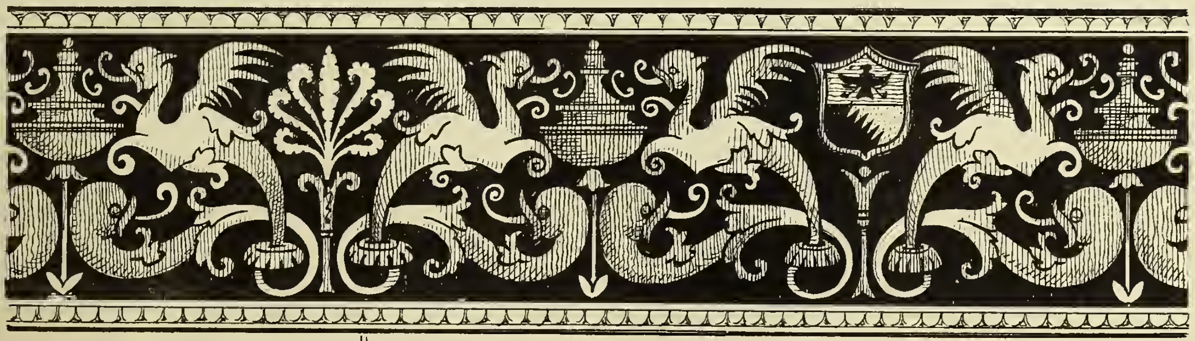

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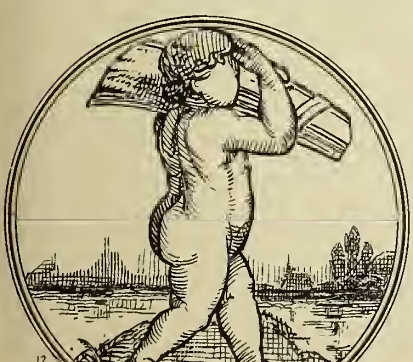

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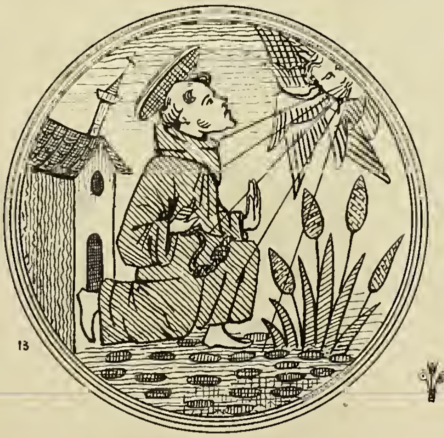

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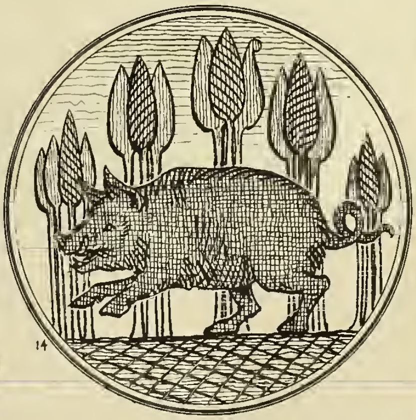

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SUBJECTS · FROM · OLD · MAJOLICA · PAINTINGS · DRAWN · BY · OWEN · W · DAVIS ·

Owen W Davis, del et lith

Printed by Whiteman & Bass

THE SOCIETY OF FEMALE ARTISTS.

THE sixth annual exhibition of this society since its re-organization in 1865 is now on view, and is characterised, perhaps, by more merit than it usually attains to. It is a great pity that it is restricted to female artists only, for if it were open to all painters alike, a few artists of note might be induced by their natural gallantry to exhibit, and thus the character of the collection would be raised. Why should men be excluded ? Are women shut out from other exhibitions ? If the male community are excluded on the ground that they have had a better art education, and possess superior brains to the softer sex, then this society would be better employed in working tapestry, making jams, or drying herbs, like our grandmothers, in which branches of art their talents are universally conceded to rise above those of the male sex ; but if, on the contrary, as we hold, they are able to compete with men, certainly in landscape painting (and in many cases in genre painting) on an equal footing, why not admit works by known painters, or why not throw open the exhibition to any who may like to send, preserving only female members and a female council and committee ? We are confident that if the ladies would follow this bit of advice, they would soon have a more popular exhibition and a more lucrative one, and in time might, perhaps, be able to give their wall space instead of letting it. The oil-paintings of the collection occupy but one wall of the room, perhaps the most important among them being that by Mrs. E. M. Ward, entitled "Going to Market, Picardy," No. 416. Despite a certain (what in the absence of a better word we must call) vulgarity in the colour and composition, this work has the advantage of many pictures here by the power of manual skill with which it is painted. A country girl with a basket on her arm containing dead poultry, clad in the wooden sabots and picturesque cap and costume of a French peasant, is dragging an unwilling little calf from the pleasant shelter of the farmyard to meet its doom at the neighbouring market town. Rather a pretty bit of summer scenery comes in on one side of the picture. Following in the school of Mrs. Ward, are two bright little works by Mrs. Crawford, No. 346, "Industry," a little maiden busily sewing away on a tiny red mat, with all her natty work arrangements by her side, really a very pleasant bit of colour ; and No. 371, "Idleness," the same little girl, only with her face fully turned towards you, playing with a kitten. No. 365, "Deserted Church of S. Etienne, Rouen," by Margaret Rayner, is a very good study ; the light coming in through the quaint old doorway is excellently painted, but the draperies of the woman and the child in the cradle are too bright in tone—they could not possibly be so light in such a dark building—the clothes too, hanging up, are crude and out of key. These inconsistencies spoil a work otherwise of much merit. The same artist sends another nicely painted interior, No. 399, "Tomb of the Princess Charlotte." A picture aiming at a higher ideal than do many pictures in the exhibition, yet showing some glaring faults, is No. 376, "The Cow Boy's Call," by Mrs. J. F. Herring. The sky and the cattle in the foreground are not in the same atmosphere, and the reflection in the water is wrong. It does not reflect the sky of the picture (which, by the way, though slightly exaggerated, is powerfully painted) but it reflects a totally opposite effect. The picture has evidently been worked at at two different times, for the cows are in rather a mellow evening light, while a heavy storm is lowering overhead. Still there is an effort in this picture which proves the artist capable of better things. In No. 382, "The Young Wife of a Royalist in troublous times," by Kate Aldham, the face is well painted and a nice expression realised. The dog in No. 390, "Guard it well," by Louise Swift, is well and broadly painted. No. 386, "Alan and Linda," children of Col. Mackinson, by Mrs. Charretie, are of course portraits. The faces are rather out of drawing, but the children are prettily posed and the accessories happily given. No. 424, "Carlino," by Miss E. S. Thompson, is solidly though rather flatly wrought. No. 394, "Found at last," by Alice Thornycroft, has been much laboured upon, but the figures are edgy, and have not the appearance of being painted at the same time with the background. The woman's figure is especially hard and cutting, and seems as if it had been done in-doors in a studio light ; some parts, too, of the background are unnaturally forced ; the child leaning over the water, is, however, very well painted and carefully finished. No. 430, "Morning on the Banks of the Medway," by Miss C. F. Williams, is decidedly the best landscape in the exhibition, painted with intention and vigour. The artist has chosen a grey and misty effect. The foreground of the picture reveals the sandy shore of an inlet, above which is a dark and watery sky, and a grey middle-distance rising into a narrow strip of brighter light, where the waters of the river touch the horizon. There is much merit in this work ; but leaving now the oil pictures, let us turn to the water-colours, amongst which every variety of subject is to be seen ; branches of flowers, babies' heads, snowdrops, dead birds, copies of pictures, studies in schools of art, sentimental country boys, plums, peaches, and cherries—some good, some bad, but, as a rule, indifferent. An exception to the rule, however, is No. 8, "Greenwich Hospital ; News from the Crimea," by Louise Rayner, a work of great merit. The cleverly-coloured figures are well introduced, the dark blues of the old pensioners' coats contrasting well with the red stone and the red-grey bricks. No. 13, "A Girl at Crochet," by Mrs. Backhouse, is pretty, though very sketchily executed. No. 32, "The Thames at Goring," by Miss S. S. Warren, is a clever work, but the artist sees everything through a sort of brown haze, and her pictures are rather apt to be sleepy. Miss Warren's best drawing here is No. 211, "Sunset on the Kennet," which is very vigorously executed. No. 46, "A Boy Fishing," by Helen Thornycroft, has many good points about it. The boy is well drawn, though he seems inlaid into the background. There is merit in No. 63, "The Last Chapter," by Rebecca Coleman. The girl reading is carefully finished. Is not the head of the girl listening to her much too big ? No. 99, "L'espoir de la fouille," by Madame Bisschop, is very clever in colour and excellently drawn ; the light, too, is capitally concentrated. Miss Lane's "Study of Flowers," No. 131, though arranged in rather a higgledy-piggledy fashion, displays careful finish and conscientious work. The background of Miss Claxton's "Seven Hats," No. 132, is sadly out of perspective. No. 140, "Copse at Brenchley—early Spring," by Miss A. Morice, is very agreeable in colour ; the primroses in the foreground are a little blurred, and would have been all the better for a few decisive touches of bright yellow to bring them into their proper place. No. 175, "Holiday-time at Hampstead Heath," by S. Wilkes, is good in colour and full of lively incident. No. 202, "On the Brathay, Westmoreland," by Mrs. Oliver, is well put together and the storm happily imagined. The body-colour is rather too freely used in No. 210, "Duck-pond, Eastbourne," by Marian Croft, but the choice of subject is good. On screen No. 1 are some excellent pen and ink sketches by E. V. B., all four entitled "Dreams." They are highly imaginative and exceedingly well drawn. This lady has greatly improved in her work, and displays much originality of thought. We commend her drawings to our readers' careful attention. No. 265, "Old Farm Buildings," by Miss F. M. Keys, is evidently the work of a beginner, but very good in colour. No. 285, "Wall-flowers," and No. 288, "Lauristinus and Rose," by Madame Hegg, are very cleverly executed. Miss Ward sends a nicely painted interior, No. 284, and Miss Sarah Linnell a most poetically wrought "Sunset," No. 314, very small as to size, but quite a gem of colour and very carefully wrought.

None of the copies in this exhibition appeared to us of even average merit, but there are three medallions in marble carefully executed ; one a portrait of Carter Hall, by Mrs. Freeman, the other two profiles of children, by Miss Foley.

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SELECTED DESIGN FOR THE LEEDS UNION INFIRMARY.

WE give illustrations of the ground plan and front elevation of the selected design for the Leeds Union Infirmary, sent in competition by Mr. Henry Walker, of Leeds. Special attention appears to have been bestowed by the architect on the matters of ventilation and heating. The design is to consist of four pavilions, with administrative blocks capable of accommodating 400 patients, yet so arranged that other blocks can be added when necessary. The erection of two pavilions only would meet all present wants. We shall give a perspective view of the building in an early number.

The design is Gothic in character, and will therefore harmonise with existing buildings on the estate. The sum per bed at the architect's disposal has forbidden the introduction of anything for mere architectural effect.

The structure is intended to be built in red brick, with sandstone dressings, the staircases and landings being of Bradford stone. The roofs would be constructed of Baltic red wood, and covered with Welsh slates : and the floors of the wards are intended to be carried on flitched beams, and laid in pitch pine, for polishing, if thought desirable. The walls and ceilings will probably also be finished with Keene's cement, and brought to a polish. Throughout the building ordinary sash windows are shown. Smoke flues will be constructed of fire-clay tubes, now coming into general use, and all air-flues will be formed of common glazed earthenware drain tubes. Jenning's urinals, lavatories, and water-closets are recommended ; and, for supplying the baths and sculleries with hot water, a Green's patent heating apparatus.

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SUBJECTS FROM OLD MAJOLICA PAINTINGS.

IN this week's impression we lay before our readers a page of subjects from old majolica paintings, taken from examples preserved in the British Museum, South Kensington Museum, and the Louvre.

Majolica, as a species of ceramic manufacture, attained its perfection in the 16th century, then suffered the usual period of decay and oblivion, and is now, just after its revival, attracting the attention of the artistic nations of Europe. The name is supposed to be derived from the Island of Majorca, where the Arabians established some celebrated potteries. The introduction of majolica ware into Italy followed upon the taking of the Island by the Pisans in the early part of the 12th century. Its fame and importance soon spread over the whole of Italy, but it attained its greatest beauty and perfection in the cities of Urbino, Castel Durante, Pesaro, Gubbio, and Faenza. Giorgio Andreoli, a Pavian nobleman, who lived at Gubbio, was probably the best and most successful ceramist of any age or country ; though he had worthy rivals, as majolica painters, in his son and fellow workman, Vincenzo, often called Maestro Cencio, Battista Franco, Orazio Fontana, and Raphael dal Colle.

The art at first depended almost entirely on richness and variety of colour, but in the second and best period this was superseded by design. The iridiscent glaze and colours were not neglected, but the highest value was attached to the execution of figure subjects. These were chiefly copies of the cartoons and sculptures of the old masters, especially of Raphael. It was at this time, about the middle of the 16th century, that majolica ware was so valued and so fashionable. Its manufacture was patronised by every Italian prince or Mæcenas, and its collection was the pet pastime of dilettanti and connoisseurs. Soon after, however, the fashion passed, and it was not until the last few years that we have seen it reappear, first in the shape of forgeries, and then of acknowledged imitations. It was long supposed that Giorgio's method of workmanship was a secret lost to the world, but now the art is entirely recovered in every respect, and the London and Paris Exhibitions of 1862 and in 1867, specimens were exhibited by the principal countries of Europe. O. W. D.

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COMPETITIONS.

Bradford.—The congregation worshipping in Sion Chapel, Bradford, propose to erect a new and capacious chapel and schools, on land extending from Harris-street to Peckover-street, Leeds-road, the site having cost £3,000. Designs for the new edifice have been prepared by Messrs. Andrews and Pepper and Messrs. Lockwood and Mawson, architects, Bradford. Both firms have chosen the Classical style. The former show an elevation to the Harris-street front, with towers boldly treated at each angle. The schools are placed in the rear of the chapel. Messrs. Lockwood and Mawson's design is in a more plain and subdued style. They dispense with towers altogether, the front of the building exhibiting a porch and pediment, the latter supported by four Corinthian columns, the treatment of the chapel being severely Classical, and plain and substantial in tone. They exhibit a tinted exterior and interior of the chapel. The schools are arranged on a somewhat different plan to that of their competitors, and the details are well attended to. The estimated cost of each is from £8,500 to £9,000.

Rochester Castle and Grounds.—Some time back we announced that the Corporation of Rochester had obtained a lease of Rochester castle and grounds from the Earl of Jersey, for the purpose of keeping the former in a state of preservation and of making the latter serve as a public recreation ground. Subscriptions were raised to lay out the grounds at an expense of £2,000 or more, and we now learn that no less than forty-eight sets of plans have been sent in by architects, landscape gardeners, and others, for laying out the grounds, &c. When this has been done, a great public improvement will have been secured for Rochester.

Shaftesbury.—Forty-two designs were sent in for the Cottage Hospital proposed to be built at Shaftesbury, Dorsetshire, as a memorial to the late Marquis of Westminster, K.G. After due consideration, the premium was awarded to the design bearing the motto "Perseverando," the author being Mr. J. B. Corby, S. Martin's, Stamford. At a committee meeting held on Wednesday last, it was ordered that the working drawings and specifications be at once prepared, and tenders obtained for the erection of the hospital.

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LIMES AND CEMENTS.

Lieut.-Col. Scott, R.E., delivered his second lecture on this subject before the Architectural Association on Monday evening last. After briefly passing in review the substance of the earlier portions of his previous lecture, he proceeded to speak again, and at some length, on the doctrine of chemical equivalents, a subject of very great importance in many matters with which the architect has to deal, and without a knowledge of which that part of his course of lectures which treated of testing limes and cements could not be well understood. He named the four points which it was essential should be borne in mind. First of all, chemical substances have always the same chemical composition; for instance, carbonate of lime always has the same proportion of carbonic acid and of lime wherever the specimen may be found, whether he (the lecturer) produced the substance chemically by uniting carbonic acid with lime, or whether it were formed by natural processes. Secondly, if one substance unites with another substance in more proportions than one, the second and the third proportions will always be multiples of the first, or bear some definite ratio to it. Thirdly, where we find a substance to combine with another substance, as hydrogen with oxygen to form water, and you determine what is the weight of the oxygen in the water, and then determine the proportion in which oxygen will combine with carbon and sulphur and other substances, you then know the proportion in which these bodies will unite among themselves. Fourthly, when we had ascertained the combining proportions of the simple substances in compounds, that then we should always find that the proportions in which they have combined will be according to the chemical equivalents of those substances. Referring to the combination of lime with water as an illustration, the lecturer exhibited some which had been obtained by the burning of Carrara marble, which was a very pure limestone indeed. Directly water was poured upon such lime a very violent action ensued, called slaking. In what proportion did water combine with lime, *i.e.*, how much water becomes solidified as a hydrate of lime in the dry powder obtained? This was readily shown by means of the chemical symbols CaO, HO, and the table of chemical equivalents on the wall. In every 37 parts of the hydrate of lime by weight there were 9 parts of water and 28 parts of lime, of which 28 parts of lime, again, 20 parts consisted of the metal calcium, and 8 parts of oxygen. If lime treated in this way with water were put into a bottle and shut up tight from the atmosphere after it had been made into a paste, there were no means whatever, as he had explained in the last lecture, whereby that lime could ever become a solid substance. But if the carbonic acid gas of the atmosphere got to it a change took place, the water being expelled by the carbonic acid gas. This gas, however, could never penetrate far into the interior of a heavy mass of mortar, and so the hardening process would be limited to a mere external film or coating. So far as the carbonic acid, however, did penetrate it would replace the water of the hydrate of lime to the extent of 22 parts by weight of carbonic acid for every 9 parts of water, carbonic acid, as the tables showed, being a compound of carbon and oxygen, in the proportion of 6 parts of carbon and twice eight, or 16 parts of oxygen. The lecturer then pointed out that the calcination of pure carbonate of lime was comparatively a simple operation; that pure lime, being infusible, there was little danger of overburning, though, as it was possible for carbonate of lime to fuse in an atmosphere of carbonic acid gas, an excessive heat suddenly applied might, by fusing the outer crust of a large stone, prevent the escape of carbonic acid gas from the interior. Referring to the preparation of plaster of Paris, Lieut. Col. Scott said that if he burnt gypsum, which was represented by the formula CaO, SO_3, 2HO, to a temperature of 212° he should get rid of half the water it contained. If he carried it to 272° of heat he should drive off the whole of the water; in either of these cases the set of plaster of Paris could not take place; therefore, in the preparation of plaster of Paris from sulphate of lime these two extremes must be avoided, and an intermediate point be aimed at which left in the substance about half an equivalent of water or a quarter of the water contained in the gypsum. Artists, he remarked, preferred burning their own plaster of Paris. They did it very carefully. They ground it to a powder, put it into a sort of pan, which was carefully heated, and after a time it seemed to boil, and there was a tumultuous motion of the whole mass. This motion having ceased, the heating was stopped, as the compound had then arrived at the right point. Plaster of Paris was best burnt for building purposes on an extensive scale, in ovens resembling those used by bakers. The manufacturer knows when it is sufficiently burnt by its presenting a dull and earthy appearance in portions, with a few bright spangles or crystals here and there. The lecturer then again pointed out that plaster of Paris was a comparatively soluble substance, and was therefore quite unfitted for any work exposed to wet. Parian, Keene's, and Martin's cements all had a plaster basis, and though from the greater density which the heat to which they were subjected gave to them they could longer resist the action of wet, yet that they also would end by being dissolved by water. Coming to hydraulic cements and lime, the lecturer said that in this case we had carbonate of lime as it existed in nature, mixed with a certain portion of silicic acid. When these two substances were burnt together, the first action that took place was that the carbonic acid was expelled. The silicic acid at the high temperature became a strong acid, although by no means a strong acid at a low temperature; and if the heat were carried sufficiently far the lime and the silicic acid would form into a silicate of lime. The heat might, however, be carried to a to a certain intermediate stage, the nature of which was really very difficult to comprehend, but on which the action of hydraulic limes and cements depended. If he took silicic acid and mixed with it lime at the ordinary temperature, a certain weak action would be set up, as shown by the table on the wall, but very inferior to that which took place after the burning of the two together, as was done in the case of cements. In speaking of this the lecturer said he had assumed that the substances had a certain definite proportion to each other, viz., three equivalents of lime to one of silicic acid, an assumption which it was evident, from the varying nature of the beds of quarries, could rarely if ever be found in nature in any quantity in sedimentary strata. If he took out some of that lime and replaced it with iron, alumina, potash, or soda, and calcined the compound, he should then get a much more definite action between the silicic acid and the lime when mixed with water. The silicic acid, as previously stated, combined much more freely with several bases than with one base. With reference to the effect of different stages of calcination, if he were just to drive off the carbonic acid, and no more, the silicic acid and the lime would have no very strong tendency to combine with one another, but the lime would exhibit a very violent affinity for water. If the temperature were considerably increased the materials would fuse and lose the property of combining with water. If calcined to an intermediate point, they would, when mixed with water, run into a solid substance, like the set of Roman cement. Portland cement was prepared from an artificial mixture of carbonate of lime and clay, in which the proportion of iron, alumina, and other bases was not so large as in Roman cement stone, and would therefore bear a higher temperature than that stone without becoming inert in its action with water. It might indeed be said of Portland cement, when properly burnt, that it had been carried to a state of incipient infusion. It was then very dense, and for this reason its weight was a test of its quality, though not necessarily an infallible test, or even a necessary one in all cases. In many parts of the country—he mentioned the fact now lest it should escape his memory when he came to testing cements—"Portland" cement was made with Bath cement, darkened in colour by the admixture of a little lamp-black (laughter). It was very easy to detect this imposture, if suspected, without the test of weight. All that was necessary was to stir a little of it in a bucket of water, when all the lamp-black would come to the surface. Passing from the calcination of hydraulic cements to hydraulic limes, the lecturer stated the difference between the two to be this:—A cement is a substance which unites with water and slakes in one action. A lime slakes first and the silicic acid runs into combination with it subsequently. In burning hydraulic lime the main point should be to burn it "tender," as the workmen term it. There are often great difficulties in burning it, because the beds differ greatly in quality. Lias limes, of which there is great ignorance amongst builders, are often better in quality in the bag than in the lump, the lump lime being made from the harder stones containing a less proportion of clay than the beds used for ground lime. Ground lias lime, supposing it to be well burned and ground, is, therefore, as a rule, better than the lump lias which comes into the market. After stating the various proportions of fuel necessary for burning various descriptions of limes, the lecturer proceeded to speak of the slaking of limes. With reference to fat or pure limes he observed that it was unnecessary to grind them, because directly water was put to them they slaked to a finer powder than they could possibly be reduced to by mechanical means. Cement and plaster of Paris of course must be ground; add water to a lump of either in its unground state, and it would still remain a lump, merely becoming harder from the solidification of the water. With regard to hydraulic lime, it might or might not be ground before using; but the wisest plan was always to grind it, for however carefully the lime might be burnt it was impossible to avoid the over-burning of some particles which might subsequently slake in the work or occasion its disruption. As to the practical question of the best way of slaking limes there were great discrepancies of opinion. Vicat had written upon the subject, as well as Treussart, Raucourt, Pasley, and others. They described three modes in which the slaking could be conducted. Firstly, what they termed the ordinary mode, which is identical with that practised all over London at the present time. In this mode the lime was surrounded by sand and enough water was thrown upon it to bring it to a fluid paste, which was subsequently more or less imperfectly incorporated with the sand. The second method, that of immersion, consisted in dipping the lumps of lime, placed in baskets, in water until the hissing ceased, and then throwing them into a heap to finish slaking. The third method of slaking lime was by the spontaneous action of the atmosphere on the lumps, when spread out and exposed for a length of time. Vicat put the relative merits of these different modes in the following order:—

Fat Limes.	*Hydraulic Limes.*
Ordinary.	Ordinary.
Spontaneous.	Immersion.
Immersion.	Spontaneous.

Rancourt considered the following to be the order:—

Fat and feebly hydraulic.	*Hydraulic and Eminently hydraulic.*
Spontaneous.	Ordinary.
Immersion.	Spontaneous.
Ordinary.	Immersion.

The lecturer suggested that when such discrepancies existed, General Pasley was not far wrong in placing no reliance on Vicat's nice distinctions. The lecturer believed the best plan of slaking strong hydraulic limes to be that of sprinkling them well with water, and then covering them up with sand for twenty-four or forty-eight hours to keep in the steam, and thoroughly slake the more inert particles. This was also the method recommended by Treussart. In conclusion, the lecturer compared some experiments made by General Treussart and Mr. Cahill, Clerk of the Works of the War Department at Plymouth. From the latter it appeared that

Plymouth lime, 70lb. to the bushel, required to bring it to a paste six gallons of water, and made 2½ volumes of paste.

Keynsham lime, 80lb. to the bushel, required to bring it to a paste three gallons of water, and made 2¾ volumes of paste.

Lyme Regis lime, 70lb. to the bushel, required to bring it to a paste two gallons of water, and made 1 6-7th volumes of paste,

whereas the bulk of paste of lime obtained by General Treussart from limes of similar chemical composition was far smaller. The lecturer believed these discrepancies to arise from the different modes of conducting the experiments.

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ANNUAL INTERNATIONAL EXHIBITIONS.

WE are requested to publish the following:—

Her Majesty's Commissioners have reason to believe that sufficient attention has not been given by architects to the fact that in the approaching Exhibition a gallery will be specially set apart for architectural designs, in which drawings contributed from this country will hang side by side with those of continental artists.

It appears highly desirable, considering the great publicity which the Exhibition will have, and the comparisons which will be instituted between English and continental contributions, that the works and the studies of English architects should be represented in a thoroughly satisfactory manner.

It depends upon the public spirit of individual architects and artists to ensure that this opportunity, the first of its kind, but which may be made the foundation of an annual Exhibition of a very satisfactory description, is not thrown away.

Facilities exist in the way of exhibitors, owing to the rule excluding works previously exhibited being relaxed this year; so that drawings suitable for exhibition, but which have been already exhibited at the Academy or elsewhere, may be sent in.

Owing to the intention of Her Majesty to open the Royal Albert Hall, in which the Architectural Exhibition will be held, on the 29th March, Her Majesty's Commissioners desire to extend the time for the reception of architectural works until Friday, March 31st, when all objects must be delivered at the Royal Albert Hall, Kensington Gore, into the charge of the proper officers, unpacked and ready for immediate exhibition, and free of all charge for carriage.

It is desirable that a previous application for space should be made; but when it has been impossible to comply with this formality, objects may still be sent in for exhibition, and will be admissible if there be room for them.

The works sent in by architects for the Exhibition of 1871 will be submitted for approval to a Committee for Selection, consisting of the following members:—Lord Elcho, Lord Bury, Sir Coutts Lindsay, Mr. E. M. Barry, R.A., Mr. Joseph Clarke, F.S.A., Professor Hayter Lewis, Mr. T. Roger Smith, Mr. Alfred Waterhouse.

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ON LONDON AS A FIELD FOR ARCHITECTURAL STUDY.*

(*Concluded from page* 115.)

THE introduction of terra-cotta as a material for the decorative features of buildings has directed attention to the examples in North Italy, where this material was originally employed. At South Kensington a great deal of building is, as you may know, going on, and the red brick and terra-cotta treatment adopted there (which I suppose we must consider due to the late Captain Fowke and Mr. Godfrey Sykes) is well deserving attention. The merit of the detail is very unequal, but some parts of the buildings for the Museum itself, of that for the schools, and of the Albert Hall, are very fine specimens of artistic treatment of a material not hitherto sufficiently employed. Near South Kensington Lady Marion Alford's house, now in progress, may be mentioned as a good example of the same class of work.

All this time I think one section of my hearers must have considered that I was forgetting them, and straying very far away from "true principles." I am coming to Gothic at last, but I must ask my friends of the Gothic school to remember that London, whatever it was before 1666, is not now a Gothic city, and never will be again. The old Mediæval work is, as we have seen, scanty, though good. The new is but scanty also, and does not seem to me much on the increase. It is true that since the Gothic revival few churches have been built in or round London in any other style, and many Gothic schools and some parsonages have been built, but here the list halts. We have one Gothic club, one railway station and hotel (not completed yet). We had at least two good Gothic warehouses, but have pulled one of them down; we have four or five sets of offices, no theatre, one bank (since abandoned), and perhaps two or three mansions. This (unless the Houses of Parliament may be supposed to make up for shortcomings elsewhere), is a sorry sort of list to compare with the hundreds of buildings that might be quoted in other styles; and that fact alone ought to induce architects who intend to practise in London to beware how they make themselves exclusively Gothic students, unless they are willing to content themselves with church architecture alone. I suppose, however, that I must be content to admit that many of you are so circumstanced that the study of Gothic architecture is the one forced on your attention by your surroundings, and probably selected by you as your favourite pursuit. Do not make it your exclusive one, or, at any rate, not through your whole career; and if you are fixed in London, try and remember that here you really have, as I have shown, very considerable special facilities for learning Italian Renaissance architecture, both from Wren's works and from the best recent examples, while (except your office practice, the Abbey, and Museums) you have few special advantages as regards Gothic. Among the many modern London churches of Pointed architecture there are some which were built before the revived style was fairly understood, such, for example, as Barry's earliest churches. These you must put aside. They were followed by a series of examples which are reproductious pure and simple of English churches, correct in detail and in mass, and many of them full of beauty. More recently churches have been built, and are building now, showing more originality and often great ability, but their authors are often found culling details from various sources and mixing them, with a noble disregard of absolute consistency, and seasoning the whole with entirely novel and original forms and enrichments. Now I very strongly advocate the early study of the second group of churches, as likely to be the most serviceable in the first instance. There are, I believe, churches in London which are as good examples for the purposes of study as if they had been built in the Middle Ages, but they are not the most popular churches; and of the latest built ones I believe that some, while we cannot refuse to admire them, are a little dangerous in the influence they might exert. Of Pugin's work we have, I think, only the Roman Catholic Cathedral of S. George's Southwark, by no means one of his best productions; but you may rely upon its features as accurate. His secular work at Westminster I will refer to later. Of churches by his successors I may name Mr. Pearson's earlier works, such as his excellent church at the Middlesex end of Vauxhall Bridge. Mr. Raphael Brandon's fine Irvingite Cathedral in Gordon-square, some of Mr. Ferrey's churches, and perhaps S. Barnabas, Pimlico, as samples of a large class, which I believe might be very serviceable as a groundwork for the study of Gothic. Of the immense mass of Protestant Nonconformist places of worship in the Metropolis, though many are good specimens of economy and ingenuity, I think those by Mr. Emmett the ones that it occurs to me I might best class with this series. But, on the other hand, you can hardly go wrong in reckoning-in any recent Roman Catholic church that is Gothic at all. This subject is so familiarly known to many here that I make no apologies for treating it with much more brevity than suits its great importance, and pass at once to recent churches, with detail drawn from Continental originals. The introduction of French and of Italian Gothic detail seems, if it has enlarged our means of producing effect and added largely to our resources, to have rendered some of our best churches to a certain extent inconsistent. Some there are which might be taken as good examples of French throughout, and these are the best; but there are others where French, Italian, and English features mix together. With a caution on this head, the whole of the churches of Mr. Street, Mr. Scott, Mr. Burges, Mr. Butterfield, and Mr. Goldie that are accessible are to be warmly commended to the student, as well as many more which I cannot here enumerate. It may be worth remark, before we leave the question of churches, how very few modern London Gothic churches are *town* churches, as many of Wren's are—that is to say, built close to a street, embedded among buildings, and devoid of a churchyard. Mr. Butterfield's fine church and dependent buildings in Margaret-street may be taken as a masterly example of the mode of procedure which suits such circumstances. This I name principally because it accounts a good deal for the likeness of many modern London churches to good country churches, and leaves a good deal to be worked out by the architect who has a very restricted town-site to build upon. Parsonages and schools are frequently to be found associated with the churches of London, and in the main will be found in the matter of architectural consistency to correspond with the buildings from which they are dependent. A good deal of good domestic architecture may thus be found scattered about among these buildings, which form a kind of link between secular and ecclesiastical architecture.

Among our moderate collection of Gothic secular buildings, the first place is, I think, due to a small unpretending and now unoccupied house in Bridge-street, Blackfriars, where the genius of the late Mr. Woodward has shown what an artist—a real artist—can make of so simple and commonplace an object as an ordinarly London house-front, with its two windows and a door for the ground floor and three windows above. This building, admirably adapted to London arrangements, and plate glass, and the Building Act, and everything else that we think totally inconsistent with fine art or Gothic, is the most artistic bit of its size that I know, and deserves that it should be drawn, every stone of it, by a dozen of you. Its general lines have been preserved, but not its spirit, in a larger building erected in Fleet-street for the same company which originally occupied it, and you may draw from this a hint as to the extreme difficulty of re-producing a design, and the value, among other things, of material as an element in design. Part of the great excellence of Mr. Woodward's building is due to the fact that, being in granite, it is treated in every way suitably to the qualities of the material. Part is also due to its excellent proportions, which are not of course preserved by retaining its features in a building put up upon a different-shaped site, with more frontage. There exists in Thames-street an admirable Gothic warehouse by Mr. Burges—a narrow slip of frontage, such as many of you will have to deal with in your day, but sufficient to display the hand of a true artist; and this I recommend to your careful notice, adding the hint that part of the instructions were not to furnish any extensive light in the façade, as an explanation of the small amount of window-space it shows. I wish I could also send you to Mr. Somers Clarke's excellent warehouse in Smithfield, but the City bought it and pulled it down for the new meat market, and it exists only in drawings. We have, however, by the same accomplished architect a good specimen of Venetian Gothic at the corner of Tokenhouse-yard, which I think you may safely accept as a thoroughly trustworthy example. We have three excellent Gothic monuments. The first is the restoration of the Cross of Charing, in front of the South-Eastern Railway Terminus, by Mr. Edward Barry. I believe this to be as faithful as it is beautiful. I know that no pains were spared to make it so, and any student in search of instruction may except it as a trustworthy example. Next I would direct your attention to Mr. Scott's Crimean Memorial at the west front of Westminster Abbey. If it had but a larger base, this would, I think, be improved; but it is, even without that, a most elegant and vigorous design, admirably carried out. Lastly, there is the Albert Memorial, which I am not going to analyse or criticise before you to-day. Nothing is more unfair to a great artist like Mr. Scott than to form or express a decided judgment upon the general effect of his work when incomplete. But details and features have a completeness of their own, and the details of this work are full of beauties. I recommend you to watch it narrowly, to examine it very carefully from time to time, and, when it is thrown open, to give most careful attention to it as the most remarkable work of its class in the Metropolis. Another work by the same eminent architect is the S. Pancras Terminus. Here the work is still unfinished, but so far advanced that one may, with greater fairness, presume to judge of its completed state. I think you ought to examine it very carefully and constantly, as a very good example of the best domestic Gothic of the present day, and as a good specimen of what one may call a stone building with the walling translated into brick. Another large and good example of Gothic is to be found in Lincoln's Inn Hall and Library, built early in the days of the Gothic revival, and yet with extremely little about it that one could wish to see altered, or wish you to abstain from becoming familiar with. Near here stand two modern Gothic buildings which require notice. In Endell-street Mr. E. M. Barry has built a very fine block of school-buildings, in red brick, of a Lombardic Gothic character, which are worth your attention, not, perhaps, so much for detail as for vigour of general design, while close to them, in a short street on the east side of Endell-street, stands a school by that able architect Mr. Wild, which, as a specimen of the effective treatment of a brick arcade, is to my mind almost unsurpassed. I am now going to pass on to the last example I shall have to quote of these Gothic secular works, and before doing so wish to say a word as to my *omissions*, which will, I trust, be largely made up by members present during the discussion. Many buildings, undoubtedly, which you might have expected me to notice, have been designedly omitted because I purposely intended those which I named to be merely specimens, and not, in any sense, to give complete lists. Some architects also whose works I should very earnestly recommend to you, are left unnoticed because they have either built nothing in London, or the London examples of their work are, in my opinion, not up to the level of their general work. Some architects, and an enormous number of buildings, are, however, left out, because it is no part of my intention to furnish you to-night with an *index expurgatorius* of what to avoid in London. A very little knowledge will teach you how to shun the worst types; but there are many buildings about which a taste cultivated by travel or the judicious criticism of a good judge is needed, in order to tell you if they are good or not, and all I can say to you about them is—take the best advice you can get. To resume, and conclude, the last Gothic example I shall name is the Palace of Westminster. Some Gothic architects will say, or used to say some years ago, that it is not Gothic, and I quite admit that the general design of the building is not arranged on the principle (generally adopted by the Gothic architects) of displaying outside the shapes and arrangement of the inside, Barry has put behind a symmetrical façade a House of Lords on one side and a House of Commons on the other, and shown neither of them; just as a symmetrical human trunk contains a heart and a liver placed symmetrically and shows neither of them. Westminster is really one of the finest Gothic buildings of Europe, and its endless sculptures, metal-work, decorations, stained glass, and carved wood-work, are a magazine of wealth; just as its roofs, pinnacles, and towers are rich studies of mass and form. I regret the style chosen for it, but notwithstanding that, and one or two other drawbacks, it contains the best work of Sir Charles Barry, Pugin, Thomas, and a host of others, and it is a fine—alas! almost our solitary—example of a great building consistently carried out, furnished, and decorated. It is a building that would exercise a good influence on the mind of any one who would often visit it, and it is a thing for a London architect to be proud of. I have now filled up a great deal of time, and have not approached the obvious part of my subject—the one which I have no doubt some may have expected would take the whole evening, and to which I will confess I had originally intended to give some prominence. I refer to London works at the present day; but I really feel that these almost force themselves on your notice, while some of the things I have enumerated might have escaped you. The fact that London offers immense buildings and improvements of all kinds for you to watch is so self-evident that you cannot need telling; but it may be worth while noticing that for some of these things London is a good, for others, a bad field. I believe that in very large structures for public purposes, London is rich. The Agricultural Hall, eight or nine railway termini, the British Museum Reading-Room, the Albert Hall, the Alexandra Palace, and the Crystal Palace, form an *ensemble* that for bigness cannot soon be excelled. In public institutions we are rich. Hotels, hospitals, infirmaries, workhouses, sick asylums, institutions, could be better studied here than anywhere in England—perhaps better than in any European city. In colleges, libraries, museums, we are not high; in royal palaces we are at zero; in Law Courts we are below zero. In warehouses and factories we are poor, except printers' and publishers' places, some of which are good; but if any of you want to study the best examples of those buildings let him go to Lancashire and Yorkshire, and see the mills and warehouses of Bradford, Halifax, and Manchester. In shops and street fronts we are poorer still. I hardly know one good shop front in London, except Sir Digby Wyatt's print shop in Gracechurch-street. In drinking fountains and public statues we are at a low ebb. In dwelling-houses we are disgraceful as to construction, bad as to design, but good as to arrangement; and the *plans* of common builders' houses will give you many a wrinkle if you look out sharp. In bridges, I think we are good. In streets, we used to be very indifferent, though at last London is beginning to learn very slowly the art of laying out streets liberally and the value of height. The Thames Embankment and the works connected with the Holborn Viaduct are the first improvements for some time past in which large-handedness has been traceable, and there is nothing more painful to a stranger who has returned home from the Continent than to compare the spacious boulevards and large open places he has left with our narrow thoroughfares and the mean spaces in front of our railway stations, unless it be to contrast our low buildings of two and three stories with the lofty structures by the help of which our more thrifty Continental neighbours economise space and expense. Here we are slowly learning better, and in Victoria-street and on the Grosvenor estate buildings can be found better suited to go with a wide street, and to supply the wants of a large city than our usual houses. The value of works in progress has been often impressed upon us by those excellent visits to them which occupy Saturday afternoons in the summer time, and I shall say nothing about them. Might it not be a good thing, if not for the whole Association, at least for the members of the Junior Class of Design, to visit some of those buildings not in progress, but in use, which may be looked upon as good typical examples for study? I throw out this hint for the consideration of the committee, and I can only say that if it were adopted I should willingly do my best to assist such a party of students in examining any building with the style or peculiarities of which I am familiar. This, or some such expedient, might help us as an Association to get good out of London; but I should like, in concluding, to urge strongly upon individuals the paradox that he will get most good here who goes oftenest away. There is so much bad architecture and bad building, and so much of what has been not inaptly termed the vernacular—or builders' compo style—that the best taste gets vitiated, the keenest perception grows blunt; and the most observant criticism becomes dulled. To me London never seems so full of good architectural points as when I return from a visit to some well-built city of the Continent, and never so poor and dull (except the picturesque beauty of the River Thames, of which I think no one with the least fragment of a painter's eye could ever tire) than when I have been continuously here for many months. Regard London, then, as a dangerous place—a place unsuited to the formation of your tastes and ill fitted to be your sole studying ground, but yet rich in buildings and objects which we can make very useful to us if we will.

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* Read before the Architectural Association on Friday, the 27th ult., by Mr. T. ROGER SMITH.

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ART WORKMANSHIP PRIZES.

PRIZES have been awarded to the contributors of the following articles sent in competition:—

Carving in Wood.

3. Oak Panel; design adapted from an old panel; by J. Osmond, 5, Featherstone-street, Bnnhill-row, E.C. Price £18. Prize of £5.

5. Mirror-frame, carved in oak and ebony; by W. H. Holmes, 117, Dean-street, Soho, W. The mirror by W. Evans. Price £7 10s. Prize of £3, to W. H. Holmes.

10. Carving from Nature, lime-wood; by R. J. Tndsbury, Edwinstowe, Notts. Prize of £10.

Inlay in Wood.

12. Amboyna Inlaid Loo-Table, the lower part inclosed by four marqueterie panels (fixed); designed and executed by Thomas Jacob, 4, Upper Charlton-street, Fitzroy-square, W. [The Society's silver medal and prize of £25; also the North London Exhibition prize*], assisted by Cornelius Riech (marqueterie cutter) [prize of £12], Charles Helfer (engraver) [prize of £5], George Brown (turner) [prize of £1], Joseph Platt (carver) [prize of £1], and George Tappin (polisher) [prize of £1]. Price 100 guineas.

14. Cabinet in mahogany and ebony woods, metal gilt mouldings (plaques painted on ivory); exhibited by W. Bertram & Son, 100, Dean-street, Soho, W.; designed by W. M. Holmes; carving by W. M. Holmes and W. Maskell; cabinet work by C. Peterson and J. Hickman. Prize of £5 each to W. M. Holmes and W. Maskell.

Inlay in Marble.

15. Table-top; by J. Taylor, 6, Mead's-row, Westminster-bridge-road, Lambeth, S.E. Price £16. Prize of £3 for this and No. 16.

16. Group of Flowers; by the above. £25.

Carving in Stone.

18. Group of Flowers; by J. Gondge, 117, Page-street, Westminster, S.W. Prize of £2 for this and No. 19.

19 Bird and Foliage; by the above.

Modelling in Plaster.

20. Figure of a Child; by J. W. Gould, 85, Castle-road, Kentish-town, N.W. The Society's silver medal and a prize of £10.

22. Portion of a Frieze for Drawing-room, Thoresby-hall; designed and modelled by J. Daymond, jun. (under Mr. A. Salvin, architect), 4, Edward-street, Vincent-square, S.W. The Society's silver medal and a prize of £10 for this and Nos. 23 and 24.

23. Alternate Centres for Frieze of Dining-room, as above.

24. Portion of Frieze for ditto, as above.

Metal Work.

Church Plate, exhibited by Messrs. Cox & Son, 28 and 29, Southampton-street, Strand. Executed under the superintendence of Mr. John Keith.

Messrs. Cox & Son, Mr. John Keith, and Mr. B. J. Talbert have each been awarded the Society's silver medal. A prize of £5 is awarded to H. Tickell, in respect of Sets Nos. 2 and 4, and a prize of £3 to J. Keith, jun., in respect of Set No. 3.

39. Watch-case and dial in silver; by T. J. Bowman, 2, Rheidol-terrace. St. Peter's, Islington, N. Price £5. Prize of £1.

41. Card-tray; designed by W. U., chased by P. A. Price, £2 2s. Prize of £1 each to designer and chaser.

48. Damascened steel-bladed trowel; designed by Sebastian G. Rice, executed (with the exception of the ivory handle) by T. R. Rice, Messrs. Hart, Son, & Co., Wych-street, W.C. Prize of £5 to T. R. Rice.

50. One of a pair of wrought-iron gates; executed for the Union Bank of London, by T. Winstanley, 25, New Compton-street, W.C., assisted by G. Winstanley and F. Lancester, apprentices; designed by Mr. Porter, architect. Messrs. Porter and T. Winstanley have each been awarded the Society's silver medal. Prize of £10 each to G. Winstanley and F. Lancester.

51. Hammered bracket in iron; designed and produced by W. Morris, 14, Goding-street, Vauxhall, S.E. Price £5. Prize of £3.

52. Hammered bracket in iron; designed and executed by William Robson, 11, Parkside-street, Battersea-road, S.W. Price £3. Prize of £2.

53. Gas Standard in brass; designed and executed by Joseph Taylor, 12, Wynford-street, Islington, N. Price £12. Prize of £5 for this and No. 54.

54. Inkstand in brass; designed and executed by the above. Price £6.

56. Portrait in repoussé, from a carving by Jean Gonjon; by Robert Tow, 36, Aldenham-street, St. Pancras-road, N.W. Prize of £7 10s.

57. Head of Satyr, repoussé in copper; blocked by W. Theuerkauff, and chased by G. Deere. 11, Hermes-street, Pentonville, N. Prize of £4 to W. Theuerkauff and £3 to G. Deere.

59. Tobacco-jar and cover (Elizabethan period); designed and executed by F. B., 31, Cantelows-road, Camden-square, N.W. Prize of £1.

Cameo Cutting.

63. "Psyche;" designed and cut by J. Ronca, 42, Blantyre-street, Chelsea, S.W. Prize of £2 for this and Nos. 64 and 65.

64. "Clytie;" by the above.

Carving in Ivory.

65. "The Rainbow;" by J. Ronca, 42, Blantyre-street, Chelsea, S.W.

Glass-blowing.

69. Two plain Toilettes; by Elijah Barnes, 13, Hingeston-street Birmingham. Prize of £5 for this and Nos. 70-72.

70. One ditto, with twisted stand; by the above.

72. Flower-glass; by the above.

73. Two toilettes, with filigree; by T. C. Barnes, 135, Camden-street, Birmingham. Prize of £7 10s. for this and Nos. 74-75.

74. Flower-glass in green and splashed with gold; by the above.

75. Loving-cup, by the above.

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The following are exhibited by Messrs. Cox & Son, 28 and 29, Southampton-street, Strand, W.C.

6. Polished brass eagle lectern (jewelled); designed by B. J. Talbert; brass worker, J. Skelley; chaser and modeller, A. Barrett; engraver, James Keith. Price 120 guineas. Prize of £3 to J. Skelley, for this and other specimens.

78. Wrought-iron gas standard, relieved with brass and jewelled; designed by B. J. Talbert; forger, W. Prendergast; fitters, R. Emms (lower half of standard), and J. Morgan (upper half of standard, including bumping leaves). Price 36 guineas. Prize of £3 to W. Prendergast.

79. Board with specimens of chasing and modelling; two fire-iron heads, figure of "Hamlet," A Barrett; three studies from natural foliage, G. B. Tapley; two classic dishes, E. Richards; hinge for side and front of sideboard, R. Emms. Prize of £1 to G. B. Tapley, and of £2 to E. Ricbards.

81. Caen-stone font, with marble columns and bosses, and oak cover with wrought-brass mountings and chain; designed by B. J. Talbert; mason, T. Woodcock; stone carvers, C. Abbey and R. Davis; joiner, E. Hooper wood carver, T. Burdett; brass workers, J. Skelley and W. Marsden; beaten cross chased by A. Barrett; engravers, W. Lucas (two upper bands and leaves) and J. Taylor (lower band and leaves). Price, font 60 guineas, cover 100 guineas. Prize of £2 to W. Marsden.

82. Reredos and altar-table, with frontal, the panels in hand-painted encaustic tiles; subject, "The Last Supper;" designed by B. J. Talbert; cartoon of subject, M. Casolani; masons, T. Woodcock, T. Brock, and R. Sutton; stone carvers, C. Abbey and R. Davis; tile-painter, W. W. Robinson; joiner, W. Layfield; wood carver, W. E Matthews; embroideresses, Fanny Thurling and Susannah Grice. Price 100 guineas. Prize of £2 10s. to M. Casolani. £2 10s. to W. W. Robinson, and £1 10s. each to Fanny Thnrling and Susannah Grice.

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Probably the largest amount of personalty eve transmitted by one person is the personal estate o the late Mr. Brassey, the railway contractor, whos will has just been proved in the Court of Probate His personalty alone is reported to have amounte to six and a half millions.

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* This prize consists of £4 18s., the interest of £167 7s. 3d. Consols, invested in the name of the Society of Arts, to be awarded by the Council "for the best specimen of skilful workmanship" at the Society's Exhibition of Art-Workmanship.

PARLIAMENTARY NOTES.

Patents for Inventions.—Mr. Samuelson gave notice in the House of Commons, on Thursday week, that on the 13th of March he should move for a Select Committee to inquire into the law respecting the grant of letters patents for inventions.—Mr. H. Palmer gave notice for the 1st of March of a Bill to amend the law relating to patents for inventions; and Mr. Macfie gave notice to move on Tuesday the 14th inst., for a Select Committee on the same subject.

Public Parks and Museums.—Sir W. Hutt gave notice that on an early day he should move the introduction of a Bill for facilitating gifts of land for public parks and museums.

The New Courts of Justice. – Mr. G. Gregory, on Friday, asked the cause of the delay in commencing the building of the New Courts of Justice.—Mr. Ayrton was not surprised at the question, considering the interest the honourable gentleman had taken in the subject, and the persistent statements during the recess of his (Mr. Ayrton's) dislike to the scheme for building the Courts of Justice on the site now selected, and that he had done his best to prevent the commencement of the work. The project for the erection of the buildings was submitted by the member for Richmond about five years ago to the House, and that project was that Government should purchase a site at a cost of three-quarters of a million of money, and should erect upon it courts of justice which were to cost the same sum. Commissioners were appointed to give their sanction to the details of the project, and to guarantee to the House that the expenditure on the whole should not exceed £1,500,000 sterling. When the plan was brought forward he gave it his earnest support, and urged the House to carry it into effect at the earliest possible period; but the Commission, instead of conforming to those conditions, adopted a scheme which was to cost £3,250,000. That project had been to some extent matured when her Majesty's present Government took office, but in consequence of discussion that arose, nothing was done for a year, and it was not till the Christmas before last that he was requested to take steps to induce the Commissioners and all others concerned to adopt some plan which would give effect to the intentions of Parliament in passing the Act. It would have been almost easier to have begun again than to have reduced the scheme which had reached £3,250,000 of estimated outlay down to the original dimensions of £1,500,000, and in the meantime the expenses on account of land purchases had increased to £900,000. After going into all the details, they were enabled to bring the project within the original compass; but still difficulties arose in reference to the construction, which were so serious, that as early as March last he suggested to the architect that he must radically change his plan if he was to conform to the wishes of Parliament. The architect exercised all his ingenuity to carry out his design, but in July he came to the conclusion that it would be better to take the course which he (Mr. Ayrton) had suggested months before. In August last the Commissioners brought forward a report approving of the plan, and it was sent to him from the Treasury, with the request that he would take the necessary steps to carry it into effect. It was not till the end of September that a formal contract was made with the architect, clearly defining his duties, and his relations with the Office of Works; and directions were immediately given to prepare a sketch plan. The architect stated that it was impossible to do that before the 1st of January, and that working plans could not be prepared before the 1st of July. In order that no delay should take place in proceeding with the work, he (Mr. Ayrton) requested the architect to prepare immediately specifications, in order to lay in the foundations, and to get the ground ready for the superstructure. At the end of November, while the sketch plan was in progress, the specifications were sent in, and tenders for the work were at once invited. It required some time for builders to ascertain what they were to tender to do, but as soon as they were aware of the nature and extent of the work they protested against the shortness of time allowed them for the completion. In consequence, the time was extended from the 1st of September to the 1st of February, when the foundations would be completed. He did not think this would lead to any delay in the erection of the buildings, because in the meantime all the working drawings and preliminary steps for the superstructure would be going on. The contractors were to go on *pari passu* with the preparation of the working plans and drawings, so that as soon as possible they should be in a position to tender for the whole work. So desirous were the Government to have this work carried out properly and promptly that notice had been given for the purchase of additional land that would be required. The result would be that, apart from the additional expense in the purchase of land which could not be avoided, the building would ultimately be erected for the original sum proposed—namely, £750,000, and it would be better and more useful for the public service in every respect than it would have been if the vast expenditure which had been checked had been incurred.

Museum of Patents.—Mr. H. Palmer, on Monday, asked the First Commissioner of Works whether any steps had been taken, or were intended to be taken, for providing a patent museum and offices adequate to the requirements of the nation, in pursuance of the report for 1869 of the Patent Law Commissioners and the several previous reports therein referred to. Mr. Ayrton said great diversity of opinion prevailed upon the subject, there being three different suggestions made in three parts of the report. During the last few years the patent laws were very much called in question, and two hon. members had given notice of motion for the appointment of a select committee to inquire into them, with a view to their entire abolition. Under these circumstances it was hardly expedient to embark in any large expenditure, such as that which would be entailed by the construction of a museum of the proportions desired by some persons.

The Royal Sanitary Commission.—Sir C. Adderley asked the Secretary of State for the Home Department whether he intended to introduce this session a bill for consolidating in one all the sanitary Acts, and giving better means of local government to every place in England and Wales outside the metropolis, under a central department, as recommended, and to a great extent prepared in the report of the Royal Sanitary commission.—Mr. Bruce, before answering the question, said he was anxious, on the part of the Government, to thank the right hon. baronet and the other Royal Commissioners for the great care and labour they had bestowed on this important inquiry (hear, hear), and the special pains they had taken to facilitate legislation in respect to it by the careful analysis they had made of the complicated laws on the subject. Through the right hon. baronet's courtesy he received a draft of the report before it was presented to Parliament, but at a late period of the recess, when every department was busily occupied in making arrangements for the approaching session. Several of the departments, however, connected with the administration of the sanitary laws were giving their close attention to the subject, and if the right hon. gentleman would wait for about three weeks he would find that the labours of the Royal Commission had not been in vain.

The Land Tenure.—Mr. C. W. Hoskyns, on Tuesday, gave notice that he would on the 14th March call the attention of the House to the injurious effects of the existing system of entail, as diminishing the investment of capital on the soil and obstructing the freedom of the land market, and would move a resolution.

Euston, St. Pancras, and Charing-cross Railway.—Mr. Crawford gave notice that he would oppose the second reading of this Bill if certain plans were not deposited.

Inclosure Law Amendment. — Mr. Shaw Lefevre moved for leave to bring in a Bill to amend the law relating to inclosure of commons, and to provide for the management of commons situate near towns. The main object of the Bill was to provide that in all cases of inclosure of rural commons, one-tenth of the land inclosed should be applied to the formation of public recreation grounds, or to allotments for the poor, provided that the quantity of land so appropriated should in no case exceed 50 acres. It also prohibits all inclosures within five miles of considerable towns, except under the direction and control of the municipal authorities. In the case of rural commons existing facilities for inclosures would not be interfered with, except in so far as related to the reservations which he had stated. —Mr. Fawcett expressed a qualified approval of the Bill, as showing an intention on the part of the Government to bring the question of the inclosure of commons fairly before Parliament.—Mr. Macfie warmly supported the Bill.—Mr. Whitwerth hoped that care was taken in the Bill for the preservation of accustomed footpaths.—Mr. Lefevre replied, and leave was given to bring in the Bill.

Metropolitan Water Supply.—Mr. Shaw Lefevre gave notice, on Wednesday, that he would on Thursday move, in Committee of the whole House, that the Chairman have leave to bring in a Bill to amend the Metropolitan Water Act, with a view of securing a better supply of water to the Metropolis.

Building Intelligence.

CHURCHES AND CHAPELS.

Blackburn.—The Baptist Chapel, Montague-street, was reopened on Wednesday last, after having undergone a thorough renovation from the effects of dry rot, &c. A new floor and gallery with open benches has been substituted, which now provides 600 sittings, being double the number it formerly held. The whole is carried out in pitch pine of a superior quality, and varnished, from the designs and under the superintendence of Mr. James Bertwistle, architect, Blackburn.

New Wesleyan Chapel, Burnley. — The foundation stone of a new Wesleyan chapel was laid at Burnley on the 4th instant. The style will be Lombardic. Seats are provided for about 700 persons, and the cost will be about £2,440. The architect is Mr. Wm. Waddington, of Burnley.

Wolstanton.—A new school-church at Longbridge Hays, near Wolstanton, was opened on Thursday week. The cost of the school-church has been about £550. The building will seat 180 worshippers, and accommodate 125 children for educational purposes, being 42ft. by 20ft., with a class-room 16ft. by 14ft. Mr. Lewis, of Newcastle, was the architect, and Messrs. Bennett & Cooke, of Burslem, have satisfactorily completed the building.

BUILDINGS.

Henley Union.—We understand that new buildings are in contemplation at the Henley Union to accommodate 100 children, with residences for master and mistress. The plans (prepared by Mr. Frederic Haslam, architect, of Henley) have received the approval of the Poor-law Board, and it is thought that tenders will be invited shortly for the erection.

Kelly College. — A short time since we announced that this building would be erected somewhere in Tavistock. We are now informed that Mr. Hanson, of Clifton, the architect of colleges at Malvern and Clifton, has recently visited the several sites offered by the Duke of Bedford; and has advised the acceptation of one known as the Parkwood site. This occupies a hillside, with a southern aspect, is about 20 acres in extent, has command of fine views of the valley of the Tavy and some of the Dartmoor hills, and possesses a good supply of water.

Great Blast of Granite.—On Tuesday afternoon a great blast was successfully fired at Bonawe Granite Quarries, Argyleshire, under the superintendence of Mr. Sim, the proprietor. The mining operations preparatory to the blast have occupied about two years. The perpendicular rock face, measuring about 100ft. square, was pierced below the centre by a level tunnel 4ft. high and 2½ft. wide, which ran straight inwards for 50ft., and then branched off into two headings at right angles 13ft. and 15ft. long respectively, each terminating in a large chamber for the reception of the gunpowder. On Saturday last, arrangements having been completed, about four tons of powder were deposited in the chambers, and the entrance was closed with stones and Roman cement. The train was fired on Tuesday at 2 p.m., by means of a powerful galvanic battery; and immediately, with a smothered subterranean sound, the mountain side seemed to heave slightly upwards, and then subsided into the quarry to the extent of many thousand tons weight.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—F. G., J. M. S., M. T. & Co., G. G. H., J. V., W. M. & Co., B. Wheeler, J. C. J., J. P. S., W. B. C., C. B. A., G. W., H. H.

John Malcolm.—Sketch came too late.

C. S.—Water Basins to hand.

H. Hatfield.—It is not the same work; in fact, an inferior one.

G. R. S.—The MS. to hand.

J. D.—We cannot.

H. Higgens.—You will see from notice in another column that the "Sketch Book" is finished

Sketch Book.—All unreturned drawings will be returned on receiving necessary instructions.

Erratum.—In our report of discussion at the Institute on S. Thomas's Hospital, in Professor Kerr's speech, page 84, middle of third column, for "barnacles" read *marbles*.

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Correspondence.

KITCHEN BOILER EXPLOSIONS.

(*To the Editor of the* Building News.)

Sir,—It appears to me that there is much misunderstanding as to the cause and prevention of these accidents. Perhaps the better title to head remarks on this subject would be Hot Water Apparatus Explosions, as the ordinary kitchen boiler, as fitted in most houses, cannot explode. The public may ascertain the dangerous kind by mere inspection; the common self-acting range boiler has a lid, removing which cook can inspect and clean the boiler; but the boiler most liable to explosion cannot be opened for cleaning, &c., except by a workman with proper tools. There is a possibility of a range being fitted with both kinds of boiler.

It is surprising to find how many workmen calling themselves plumbers, &c., are ignorant of the use and construction of these apparatus. Even "Plumber," in your last number, has stultified his excellent remarks at page 74. He ought to be aware that *all* apparatus for heating by hot water are provided with *two pipes* (up and down), or how would circulation, or revolving as he calls it, take place? The cistern is a mere reservoir for a quantity of hot water greater than that contained in the pipes and boiler; it has nothing to do with the circulation, and may be placed anywhere, but of course if below the highest point of the pipes they must be connected, provided with a steam pipe, and the cistern must be closed hermetically; the cistern will *not prevent accidents*. The pipes should have a continued fall, but not only for the reason that "Plumber" gives, for should there be at any part of the length of the pipe a trap or downward bend, steam will accumulate until the pressure equals the resistance, when it will escape with a loud rattling noise, very annoying but not dangerous. I have known this to take place when the up-pipe is too far into the top of the boiler (it is best connected with a flange and four screws); also I have seen the same defect when a trap is formed, when the top of the boiler is set not level or inclined the wrong way. I should like to ask "Plumber" what would happen if the two pipes got frozen? Supposing cook, coming down late one cold morning, hastens to make up a good fire. I fancy "Plumber" would not like to be in the kitchen.

Now, allow me to add one more suggestion. In addition to the fusible plug let a small pipe be carried up the kitchen flue, or close alongside, to a point above the highest point of the cold supply, for the purpose of keeping at least one opening to the boiler, so that the act of lighting the fire would melt any ice that might happen to get in it before the pressure would get to explosion point. There is yet a chance of accident from the cold supply ceasing *at any time of the year*, and cold water rushing suddenly into a red-hot boiler would cause an explosion. To reduce the chance of this happening, I would have the lowest cock so situated as to prevent the boiler from being emptied; the supply of hot water ceasing would give a good notice that something was wrong, and even if this was neglected the fusible plug would come into use.

As all so-called *self-acting* apparatus are dangerous, only care and knowledge will entirely prevent these accidents from happening.

I have just heard that the last apparatus that I superintended the construction of had a near chance from an accident through the ignorance of a workman who was called in to *make sure against accident* during the late cold weather. The fire had been kept out from fear, as the pipes were frozen, and the first thing this clever man did was to disconnect and plug up a safety pipe that I had insisted upon being fixed up the kitchen flue, and then he made a fire. Fortunately, the ice melted before any accident happened. T. S.

IMPEDIMENTS TO SANITARY PROGRESS.

Sir,—As the force of a particular case, when used to illustrate a general proposition, depends upon the correct statement of facts, I am sure you will permit me to point out several errors in the article headed as above in your issue of the 10th inst. It is stated (1) "That in the parish of Beckenham a sewer authority has been formed," and (further on) "a vestry meeting appointed a sewer authority." The latter words show in what sense the former are to be taken. The statements are inaccurate. The vestry of Beckenham has not appointed, and cannot appoint, a sewer authority. It is itself a sewer authority, as is also the vestry of every parish in England and Wales, except where the local authority consists of mayor, aldermen, and burgesses, or of commissioners, &c., under local Acts of Parliament (see Sewage Utilization Act, 1865), and (quoting the words of the Home Secretary in his "Circular of Information as to the powers and duties of Sewer Authorities"), "It is important to remark that the powers and duties of these authorities are not optional, to be taken up, dropped, or declined at will. The powers are given and the duties are imposed *compulsorily by law*." These duties, then, being imposed on "the vestry" compulsorily by law, what it has done is what it is authorised to do by the 4th section of the Sanitary Act, 1866; it has appointed a committee "at a vestry meeting specially convened for that purpose." It can at any time alter the constitution of or dissolve the committee. The committee are "the agents" of the vestry, and their appointment does not release the vestry from any statutory obligation as a sewer authority.

It is here obvious what care the legislature has taken to secure the protection of the ratepayers. (2) It is stated in the article "This authority forthwith employed a surveyor, &c." This authority is intended in the article to mean the authority appointed by the vestry—*i. e.*, the committee. This statement is also entirely incorrect, the surveyor being employed and his report being ordered by the vestry itself more than three months before the appointment of the committee. (3) "This sewer authority" is formed under the Utilization Act, 1867. This also is inaccurate, the sewer authority being created as before stated compulsorily by law under the Act of 1865, and "the committee" having been appointed as before stated under the Act of 1866. (4) "No steps have been taken," &c., "to consult the general feelings of the ratepayers." This statement and much that follows is disposed of by the considerations that the report of the surveyor has not been adopted, that it has been referred by the vestry to the committee "with instructions to consider and report thereon to the vestry as speedily as possible, and that the committee has sat on four different days for more than 13 hours altogether for the special purpose of gaining information from and hearing the views of, the ratepayers, and that every ratepayer was invited by notice sent to his house to attend that one of these meetings most convenient to himself. (5) "All authorities with rating powers should be elected directly from the ratepayers." This is already secured by the existing law (see Sewage Utilization Act, 1867, section 17). The writer of the article would seem to suppose that "the committee" is invested with rating powers. This is not and cannot be the case. The rate has to be made by the overseer upon receiving the precept of the vestry, not the committee. (6) The vestry is spoken of as meeting at "12 o'clock at noon." At this hour, as I am informed by an old inhabitant, the vestry of Beckenham never has met within the memory of man; the usual hour until quite lately has been 9 a.m.; latterly the meetings have been at 5 p.m.

I would only add, that the committee has no objection to any public strictures on themselves. They "represent the general body of the ratepayers" as much as any Member of Parliament his constituents. They will rejoice to see any public notices of their acts or the acts of the vestry, provided such notices are accurate; and for approval of their conclusions, they are content to await the verdict of the ratepayers, "without further reference to whom no new drainage works are to be executed nor any contract for the same made." I ask the insertion of these lines, feeling sure that you will be most ready to correct such mis-statemets for the credit of your paper, and to remove any erroneous notions which, on its authority, might gain ground in Beckenham and elsewhere.—I am, &c., Edward J. Athawes,

Chairman of the Committee of the
Beckenham Sewer Authority.

Feb. 15, 1871.

ARCHITECTS AND THEIR ASSISTANTS.

Sir,—I must agree with "Would-be Industrious" that it is very sharp practice on the part of principals to grudge the few shillings their assistants may earn after office hours. I know the "town in the West in which the *meeting* was held."

I believe I am right in stating that in neither of these offices do they supply "quantities" for any work, and yet at the meeting the principals decided that none of their "assistants should be allowed to do so," nor, in fact, any other work they might be able to do out of office hours. I feel sure, Sir, you will agree with me that this *is rather sharp practice*, and shows a very selfish spirit on their part to grudge the few hard-earned shillings to their ill-paid assistants. A little evening employment now and then encourages the younger branches of the profession to be industrious; and it is not only beneficial in a pecuniary point of view, but also highly instructive.—I am, Sir, &c.,

Fair-play.

COMPETITION, GRAY'S SCHOOL, ESSEX.

Sir,—The statement volunteered by a good old author that "manners maketh man" is one that merits, obtains, and maintains universal credence, and is in receipt of verification perpetually.

From one of those "gentleman of the cloth" who ostensibly devote their talents and energies to the amelioration of their untutored and unenlightened brethren, and occasionally omit to "practise what they preach"—or, at all events, obtain credit therefor—one would scarcely anticipate an entire lack of common courtesy and a palpable breach of good manners.

The next time "the powers that be" at the above-mentioned place obtain a set of drawings in competition and return the same in anything but good condition, without one word of information regarding the award, explanation, or acknowledgment for time and trouble,

"May I be there to see."

I am, Sir, &c., F.

NEW LAW COURTS.

Sir,—If "J. M. L." were one of the initiated, he would *better see* the cause of the great disparity of tenders *tempo* 1871. The difference in percentage between the highest and lowest estimates in the case cited by no means approaches the unprecedented, and only attracts attention on account of the magnitude of the aggregate amount.

The simple solution of the mystery, to my mind, is that the highest contractors (no rarity, by the way) tendered perhaps for the sake of so doing, for the purpose of keeping their names before the public, and probably to avoid giving offence to the architect by not tendering, and without the remotest intention of securing the job, keeping well out of the way advisedly!

The insinuation in the concluding paragraph, besides being open to misconstruction, is fallacious in argument; sins of commission are quite as frequent as the opposite in quantity-taking, and if an error of the former class is open to correction by the employment of two or more surveyors, does it not afford the very best argument for their employment?—I am, Sir, &c., F.

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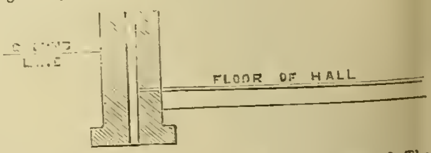
Intercommunication.

QUESTIONS.

[2125] PROBLEM IN CONSTRUCTION.—Will any of your readers oblige me with a solution of the following problem in construction:—In the case of a hall under a chapel with hollow walls and floor about 5ft. below surface of ground, thus:



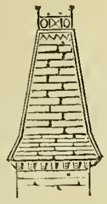
will a damp course of asphalte or slates be necessary? The hollow in centre of brick wall will prevent damp penetrating through the walls laterally; if a damp course is required, at what level should it be placed? It is usually a little above the ground line, but in this case I think it should be below the level of hall floor.—A Cautious One

[2126] PLUMBERS' WORK.—May I ask the favour of a subscriber informing me what is meant by "Lead-soldered tacks"?—F. Thomas.

[2127] ANCIENT CHURCH ARCHITECTURE.—Wil some one kindly inform me where I can obtain a work o ancient church architecture?—W. H. B.

[2128] ISOMETRICAL PROJECTION.—Would some one give me the name of an elementary treatise on isometrical projection, not too expensive?—CUPIDUS DISCENDI.

[2129] MANSARD ROOFS.—Are roofs of this description correctly styled Mansard roofs? If not, what should



they be termed?—F.

[2130] CEMETERY CHAPELS, ETC.—If there are any regulations in force which in any way affect the construction of cemetery chapels, lodges, &c., will some obliging intercommunicant kindly state where they are obtainable?—F.

REPLIES.

[2111] CONE OF RAYS.—If "Student" draws two lines to meet at the station point to meet at an angle of 60° till they cut the picture plane he will have the diameter of the base of the cone of rays; generally speaking, either the station point, or the point of distance, or the length of the line of direction are given on the examination papers. If "Student" will send me his address I will give him more information.—T. MALLINSON, Gargrave, Leeds.

[2120] DRAWING BOARDS.—The untoward circumstance described is common on the use of new boards. The cause is this, the wood being soft and absorbent, the moisture passes from the wet paper into the board, and which thereby expands, rendering to great extent nugatory the expansion of the paper. When worked on, the paper from the heat of the body tightens, but as the board has not dried thoroughly the moisture from it loosens the paper when put away. When by use the board gets ingrained with dirt and grease it is less absorbent, and the evil is not as great. If the paper is thoroughly soaked on another board until the pasting is done the evil will be abated, but the only perfect correction would be to have the board painted. I wonder the makers of drawing boards do not adopt this improvement, having the drawing surface painted one coat in oil, and then rubbed down to a perfectly smooth surface. Such surface would be better to draw upon, by not absorbing the wet it would be better for straining paper on, and would be, I think, less liable to warp. Ink spots could also be wiped off it, and so prevent another common disaster in such marks appearing through the strained paper.—P. E. M.

[2120] DRAWING BOARDS.—In answer to query regarding the slackening of drawing-paper, I can only say it is not the fault of the board, as "Annoyed" seems to think; but simply that he, when straining the paper, did not wet it sufficiently. When next he is straining paper, let him well saturate the same, and glue or paste while wet, drying the edges of paper before applying the glue, &c.—G. P. B.

[2121] S. PANCRAS' CHURCH.—In this week's number I find the following inquiry by "A Young Architect." "Is the present old S. Pancras church 'good old architecture or modern?" I beg to inform it is only 24 years old (Messrs. Gough & Roumien, architects). The old church was principally late Tudor. When it was pulled down to be rebuilt, several small Norman columns, pilaster piers and other remains of a Norman edifice were found among the materials used in the wall, leaving no doubt but that the original church had been a Norman structure which bad been at some time completely rebuilt and part used as building material in the reconstruction. In answer to another inquiry in your correspondence, relative to the Saturday half-holiday, I beg to say that my clerks always have had it, leaving at 2 o'clock from the very commencement of the holiday movement.—R. L. ROUMIEU, 10, Lancaster-place, Strand.

[2121] OLD S. PANCRAS' CHURCH.—The church is modern Norman, and of very poor quality.—P. E. M.

[2124] CRUSHING WEIGHT OF STONES.—The following are the fracture and crushing weight of cubes of stones with 2in. sides

	Weight producing first fracture. Tons	cwt.	Crushing weight. Tons	cwt.
Ancaster (oolitic limestone)	3	$0\frac{72}{100}$	4	$3\frac{49}{100}$
Darley Dale (white sandstone)	11	$2\frac{64}{100}$	12	13
Mansfield (white sandstone)	4	$11\frac{8}{100}$	9	$7\frac{22}{100}$

One fourth of the above will give the fracturing and crushing weights of cubes of stones with 1in. sides, or in practice for every superficial inch on the bed face of the stone.—W S., Hull.

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WATER SUPPLY AND SANITARY MATTERS.

EXETER.—Prompted, doubtless, by the successful experiments which have been made at Romford and elsewhere in the application of sewage manure to agricultural purposes, the inhabitants of Exeter have determined to establish a company entitled the City of Exeter Sewage Manure, Irrigation, and Farming Company, having for its object the utilisation in some measure of the now wasted outflowings of large towns and cities. Beginning at home, it is intended in the neighbourhood of Exeter to carry on a farm manured by the sewage of the city. The capital of the company is to be £40,000, in £5 shares.

Our Office Table.

ECONOMY (?) AND THE NEW LAW COURTS.—Some calculations just made respecting the cost of the new Law Courts are not, as a weekly contemporary justly says, flattering to our economising Government. £800,000 was laid out on the site, between four and five years ago. The loss of interest, therefore, amounts to some £26,000 a year, not reckoning on the compound principle. The contract of the excavation of the site has been taken for £36,000; therefore in less than a year and a half the interest would have paid for the whole of this operation. If the work had been commenced three months ago, 2,200 men could have been employed during the whole of the time at £1 a week each by one year's interest. It would be interesting to calculate how many cases of relapsing fever, how fine practices on the part of workhouse guardians, how many deaths from starvation, might have been prevented by laying out this sum on the howling wilderness which must be cultivated some time.

MR. BURGES'S NEW WORK.—We see that several copies of Mr. Burges's work are now at the disposal of the public in consequence of some of the subscribers not having taken up their subscriptions. This, of course, is a natural consequence of the great delay in bringing out the work, and should be a warning to other gentlemen engaged in similar enterprises.

FAT CHURCHYARDS.—We had something to say about the condition of a Devonshire churchyard a few weeks back. According to the *British Medical Journal*, Leeds is doing its best to establish a forcing ground for disease in the Burmantofts Cemetery in that town. The ground is evidently overcrowded with corpses. The soil of a newly-dug grave lately opened was so tainted that the mourners were choked and sickened, and the priest who read the service had to turn his back on the grave and hurry away to recover from the faintness and sickness which overcame him! Truly a state of things at once scandalous and dangerous to the people of Leeds—not, however, that they stand by any means alone. We know of one London cemetery in which, after a heavy fall of rain, no disturbance of the ground is needed to indicate which portions of it should long ago have been closed.

NUNHEAD AND GREENWICH RAILWAY. — The works upon this line are being taken in hand, and it may be expected that they will be in such a forward state in a month or two as to afford direct means of communication between Greenwich and the Crystal Palace, *via* Nunhead. The line is about two miles in length, and there will be three stations, one at the terminus *pro tem.*, at the foot of Blackheath hill; an intermediate one at the crossing under the highway at the top of Loampit-hill, Lewisham; and the third at the junction at Nunhead of the new line with the South London line, which is worked by the London, Chatham, and Dover Company. Only one line of rails has been laid as yet; but a double line is to be put down. The work is of the best character in strength and fitting.

THE NEW COMMISSION OF SEWERS.—The Lord Mayor on Tuesday opened the new Commission of Sewers for the City at Guildhall. The ceremony was followed by an animated debate on the election of chairman of the Commission. In the result the election fell upon Mr. Deputy de Jersey by 37 votes to 22, in a court of 59 members.

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MEETINGS FOR THE ENSUING WEEK

MONDAY.—*Royal Institute of British Architects.*—"On the Roof of St. Pancras' Station." By Mr. W. H. Barlow, C.E., F.R.S. 8 p.m.

Architectural Association.—"On Limes and Cements." Lecture III. By Lieutenant-Colonel Scott, R.E. 7.30 p.m.

Society of Engineers.—Discussion on Mr. E. Crompton's paper "On the Economics of Railway Maintenance." 7.30 p.m.

TUESDAY.—*Institution of Civil Engineers.*—(1) Discussion upon "Pumps for Low Lifts;" and, time permitting, (2), "Account of the Balance Dock at Pola, on the Adriatic." By Mr. Hamilton E. Towle, of New York. 8 p.m.

FRIDAY.—*Architectural Association.*—"On the Recent Works at All Hallows' Church, Lombard-street, with Remarks on Sir Christopher Wren's Churches." 7.30 p.m.

SATURDAY.—*Architectural Museum.*—"On the Casts in the Museum Collection." By J. P. Seddon, F.R.I.B.A. (Visit of Members of Architectural Association). 3 p.m.

Timber Trade Review.

PRICES 15th February, per Petersburg standard:—Bollsta mixed yellow, 8*l*; Dram 2nd yellow, 7*l* 10*s*; do 3rd yellow, 7*l*; Gothenburg 3rd yellow, 8*l* 5*s*; Hudikswall 1st yellow, 9*l*; do 2nd yellow, 8*l* 10*s* to 10*l*; do 3rd yellow, 8*l* to 9*l* 10*s*; Petersburg 1st yellow, 10*l* 10*s* to 11*l* 15*s*; Munksund 1st yellow, 9*l* 5*s*; Quebec 1st dry floated yellow pine, 12ft. 3 × 11, 17*l*; do 1st floated, 16*l*; do 2nd floated, 12*l* to 12*l* 5*s*; do. 2nd dry floated, 12*l* 10*s*; do 3rd floated, 9*l*; do 3rd dry floated, 9*l* 10*s*; Sikea yellow mixed, 8*l* 15*s* to 9*l*; do 3rd yellow, 7*l* 15*s*; Sandviken mixed yellow, 8*l* 10*s*; do 3rd yellow, 7*l*; Skonvik mixed yellow, 9*l* 5*s* to 9*l* 10*s*; Sundswall mixed yellow, 8*l* 10*s*; do 3rd yellow, 7*l* 5*s* to 7*l* 10*s*; do mixed whitewood, 8*l* 10*s*; do 3rd whitewood, 7*l* 10*s*.

Per 120 12ft. 3 × 9.—Bathurst unsorted white spruce, 12*l* 5*s* to 13*l* 5*s*; Miramichi unsorted white spruce, 12*l* 5*s* to 14*l* 5*s*; Quebec 1st white spruce. 16*l* to 18*l*; do 2nd, 16*l*; do 2rd, 15*l* to 15*l* 5*s*.

Quebec black walnut timber, 2*s* 6*d* to 2*s* 8*d* per foot cube; Quebec hickory, in at 4*l* 5*s* per load; Quebec birch, 2*l* 15*s* per load; Sundswall fir timber, 2*l* 15*s* per load; Stettin oak, 4*l* 17*s* 6*d* per load; crown Memel oak, 5*l* 15*s* to 6*l* 15*s*; crown Memel, 4*l* to 4*l* 10*s*; Riga, 3*l* 5*s* to 3*l* 7*s*; United States pitch pine, 3*l* to 3*l* 15*s*; Sabicu, 6*l* to 8*l*; Indian teak, 12*l* 10*s* to 13*l* 10*s*; African oak, 6*l* to 7; British Guiana greenheart, 5*l* 10*s* to 6*l* 10*s*; Australian ironbark, 6*l* to 6*l* 10*s*.

Memel crown pipe staves, 170*l* to 180*l* per mille; do brack, 130*l* to 135*l*.

Cuba cedar, 6*d* to 7*d* per foot; Honduras do, 4½*d* to 5½d; pencil do, 2*d* to 4½*d*.

Per Petersburg standard.—Saguenay 3rd bright yellow pine, 8*l* 10*s* to 9*l*; do 2nd red pine, 10*l* to 11*l*.

Dantzig 2nd crown deck deals, 14*s* per 40ft. 3in.

Petersburg lathwood, per fathom of 216 cubic feet, 5*l* to 6*l*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:—

Pig Foreign	per ton	£17	10	0	£17	12	6
,, English W.B.	do	19	10	0	19	12	6
,, Lead Co.	do	18	12	6	18	15	0
,, Other brande	do	18	0	0	18	5	0
Sheet Milled	do	19	0	0	19	10	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER:—

British—Cake and Ingot	per ton	£72	0	0	73	0	0
Best Selected	do	74	0	0	75	0	0
Sheet	do	75	0	0	78	0	0
Bottome	do	78	0	0	80	0	0
Australian	do	72	0	0	75	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bare, cash	do	65	0	0	66	0	0
,, Refined ingot	do	70	0	0	72	0	0
Yellow Metal	per lb	0	0	6¾	0	0	7

IRON:—

Pig in Scotland, cash	per ton	£2	12	9	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
,, Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	5	0	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	10	0	9	15	0

TIMBER.

Teak load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	5	5	0
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	5
,, birch	3	15	5	0
,, elm	4	5	4	15
Dantzic oak	5	5	6	15
,, fir	2	12	4	10
Memel fir	3	10	4	5
Riga	3	5	3	10
Swedish	2	5	2	15
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	6	0
,, St. Petersburg	5	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do	12	15	13	10
Archangel, yellow	11	10	13	10
St. Petersburg, yel.	12	15	13	5

Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	0
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per	s.	d.	s.	d.
sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
PUMICE STONE pr ton	6	0	8	0
OILS, &c.				
Seal, pale per ton	£ 7	0	0	0
Sperm body	84	0	0	0
Cod	35	10	0	0
Whale, Sth. Sea, pale	36	0	37	0
Olive, Gallipoli	50	0	50	10
Cocoanut, Cochin, ton	45	0	47	0
Palm, fine	38	10	39	0
Linseed	31	0	0	0
Rapeseed, Eng. pale	48	0	48	10
Cottonseed	28	0	35	0

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Trade News.

TENDERS.

BATTERSEA.—For the construction of new roads, sewers, &c., on the Parkfield Estate, Battersea, the property of James Lord, Esq.

	Contract No. 1.	Contract No. 2.	Total.
Hiscox & Williams	£1500	£1200	£2700
Aviss & Co.	1469	1205	2675
Blackmore	1345	1010	2355
Neal	1300	1000	2300
Harris	1045	897	1942

GUILDFORD.—For new shop-front and alterations to N 145, High-street, Guildford. Mr. H. Peak, architect:—

Strudwick	£417	0
West	305	0
Burdett	298	13
Pearce & Clark	298	0
Garnett	289	0
Pollard & Son	275	13

Covent Garden. Tenders for Evans's. Mr. J. H. Rowley, architect. Quantities supplied by Mr. J. J. Green:—

MUSIC HALL.

King & Son (too late)	£3340
Hill, Keddell, & Waldram (too late)	3255
Eaton & Chapman	3197
Brass	3117
Scrivener & White	3104
Shepherd	3038
Nightingale	3028
Sharpington & Cole	2987
Crabb & Vaughan	2971
Snowdon (accepted)	2644

HOTEL.

King & Son (too late)	1356
Hill, Keddell, & Waldram (too late)	1321
Shepherd	1395
Nightingale	1365
Sharpington & Cole	2333
Eaton & Chapman	1294
Snowdon	1290
Scrivener & White	1278
Brass	1270
Homann (accepted)	1226

Guildford.—For additions to house in the Portsmouth-road, Guildford. Mr. Henry Peak, architect:—

Taylor	£518	0
Pollard & Son	510	0
Dickenson	453	0
Loe	450	0
Goff	414	10
Garuett	414	0

Henley.—For alterations to premises, Market-place, Henley. Mr. Frederic Haslam, architect:—

Sadler	£250	0
Hamilton	245	10
Willis	219	10
Macqueen	207	10
Clements (accepted)	196	17
Barney & Wright (too late)	192	0

Henley.—For the erection of a lodge and committee-room, on the Henley Cricket-ground, for Mr. J. F. Hodges. Mr. Frederic Haslem, architect:—

Weyman	£265
Clements (accepted)	230

Mildmay Park.—For the erection of new chancel, for the reconstruction of nave, and for new north and south aisles, S. Jude's church, Mildmay Park, for the Rev. W. Pennefather, M.A. Mr. E. Clare, architect. Quantities supplied by Messrs. Waymouth & Son:—

Crabbe & Vaughan	£4985
Browne & Robinson	4698
Conder	4575
Dove, Bros.	4495
Hill & Sons	4468
Perry, Bros.	3809
Foster (accepted)	3777

Peppard.—For Parochial school and residence at Peppard, for the Rev. T. Williams, M.A. Mr. F. Haslam, architect. Quantities supplied:—

Door & Co.	£788	0	9
Hamilton	722	10	0
Nightingale	711	0	0
Pither	706	0	0
Woodbridge	698	0	0
Simmonds	687	0	0
Winter	685	0	0
Ponton	272	13	9
Saddler	650	0	0
Harrison & Son	640	0	0
Dodd	635	0	0
Harrison & Edwards	620	0	0
Wright	589	0	0
Clements	586	18	0
Cox	573	14	0
Wright Bros. & Goodchild	570	0	0
Willis	566	15	0
Crook (accepted)	556	16	0

Tower-hill.—For the erection of Tower-hill Catholic schools. Messrs. J. Young & Son, architects:

Ashby & Horner	£4660
Brass	4497
Conder	4317
Henshaw	4283
Sewell & Son	4049
Browne & Robinson	3880
Hill, Keddell, & Co.	3795
Merritt & Ashby (accepted)	3666

Whitechapel.—For a new stove to a sugar refinery. Mr. G. H. Simmonds, architect:—

Wood Brothers	£633
Jacobs	625
Outhwaite & Son	592

Woodford.—For the erection of a cottage residence at Woodford. Messrs. John Young and Son, architects:—

Rivett	£666
Turner	663
Merritt & Ashby	553
Chessum	509
Rowbotham	450
Osborne	450
Smith	375

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Whitchurch, Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. Local Board Officer Whitchurch, Salop.

Whitchurch (Whitchurch Local Board), Feb. 20.—For the erection of town-hall and markets in Whitchurch, Salop. S. M. Lockwood, architect, 85, Foregate-street, Chester.

War Office, Feb. 25.—For works and repairs, and supply of building materials to War Department. Buildings and property at Ashton-under-Lyne, Birmingham, Bradford, Burnley, Bury, Carlisle, Chester, Coventry, Fleetwood, Hartlepool, Isle of Man, Leeds, Liverpool, Manchester, Maryport, Newcastle-on-Tyne, Northampton, Paull-on-the-Humber, Preston, Scarborough, Seaham, Sheffield, Stallingborough, Sunderland, Tynemouth, Weedon, Whitehaven, and York, including the surrounding neighbourhoods, from the 1st April, 1871, till 31st March, 1874.

Bolton.—Contract C.—March 3.—The Corporation of Bolton are prepared to receive tenders for the joiners' work, plastering, painting, glazing, and plumbers' fittings required for the completion of the new town-hall. The drawings and specifications may be seen, and bills of quantities obtained, on application at the offices of Mr. William Hill, architect, Park-square, Leeds; or at the offices of Mr. George Woodhouse, architect, St. George's-road, Bolton, between the hours of 10 a.m. and 5 p.m., from the 16th day of January next to the 3rd day of February next. Sealed tenders are to be sent in not later than 12 o'clock at noon of Friday, the 3rd day of March next, addressed to the undersigned at the Corporation Offices, Acres Field, Bolton, and endorsed "Tenders for the Town-hall, Contract C." R. C. Hinnell, Town Clerk.

Bristol Local Board of Health, Feb. 23.—For contructing and completely finishing certain intended brick sewers, valve chambers, and other works in "The Avon Intercepting Sewer District." Length of sewers about 7563 yards, varying in size from 3ft. high by 2ft. 6in. wide to 7ft. 6in. in diameter. John G. Heaven, Clerk, Local Board of Health Office, 13, Prince-street.

Portsmouth, Feb. 20.—For the erection of a church at Portsdown, five miles north of Portsmouth. John Colson, architect, St. Swithin's-street, Winchester.

Birmingham, Feb. 25.—War Department triennial contract for builders' work. Colonel Commanding, Royal Engineer Office, Manchester.

Bradford, Feb. 25.—War Department triennial contract for builders' work. Colonel Commanding, Royal Engineer Office, Manchester.

Suffolk, Feb. 25.—For the reseating and other work to the parish church of Hadleigh, Suffolk. w. Grimwade, churchwarden, Bank, Hadleigh.

Berwick-on-Tweed, Feb. 25.—(1st) Building two tanks, engine and boiler-house. (2nd) Furnishing 30-horse power engine, boiler, pump, &c., and fixing. (3rd) Furnishing 2,700 yards of 9in. cast-iron pipe. (4th) Laying and jointing the same. J. C. Weddell, Clerk to Local Board.

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BANKRUPTS.

(TO SURRENDER IN LONDON).

Brian Edwin Abery, London-lane, Hackney, builder. Feb. 28, at 12.

(TO SURRENDER IN THE COUNTRY).

Joseph Cropper, Sheffield, plumber, Feb. 20, at Sheffield—Hammond Parker, Huddersfield, builder, Feb. 27, at Huddersfield.

PUBLIC EXAMINATIONS.

March 5, W. S. Hollands, Richmond-terrace, Clapham-road, architect—Feb. 28, H. Williams, Sedgley, fire brick manufacturer.

DIVIDEND MEETINGS.

Feb. 21, J. Parker, Kingston-upon-Thames and Surbiton, coal and lime merchant—March 9, J. Moore, Pickering, Yorkshire, road surveyor—March 7, J. S. Barnsdall, Nottingham, painter—Feb. 24, R. Roberts, West Derby, builder—March 2, T. Baxter, Brandon, Durham, timber merchant—March 7, J. S. Taylor & J. Marsden, Derby, ironfounders.

DECLARATIONS OF DIVIDENDS.

C. W. Wiggs, Waltham Abbey, buider, div. 1s. 5d.—S. Shipp, Bitton, mason, div. 2s. 5d.—E. P. Tilley, Clevedon, builder, div. 1d.

SCOTCH SEQUESTRATIONS.

R. Anderson, Edinburgh, painter, Feb. 15, at 2, at Dowell's Rooms, Edinburgh.—W. and D. Muir, Glasgow, contractors, Feb. 20, at 12.

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PARTNERSHIPS DISSOLVED.

Reed & Stephenson, Gateshead Low Fell, joiners—Lee & Stanhope, Belper, painters—Laycock & Thornton, Bradford or elsewhere, plasterers—T. & C. Elwyn, Darlington, joiners—Kerr & Dalziel, Manchester, house painters.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast table with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—James Epps & Co., Homœopathic Chemists, London.

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THE BUILDING NEWS.

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LONDON, FRIDAY, FEBRUARY 24, 1871.

THE BRITISH MUSEUM.

FEW more interesting, and few more more neglected departments are contained in the British Museum than the Collection of Drawings and Prints, which, however, are very much out of sight. They chiefly illustrate the work of English engravers and designers—but not English exclusively—from the reign of Henry VIII. to the middle of the eighteenth century, and include many admirable examples of Holbein, who, with so many other foreign artists, resided a long time in our country, Rubens, Vandycke, and Hollar among them. The Holbeins are generally outlined with the pen, and afterwards washed with Indian ink; though occasionally a tinge of colour is added. The subjects are usually sacred, varied by sketches of ornament for goldsmiths, jewellers, and armourers, and also for chimney-pieces and state staircases. These works cannot possibly be appreciated by those who undertake to roam through the building in a single day. They are studies of exquisite interest. Again, the Rubens gallery, in chalk, sepia, ink, and tint, leads up most usefully to a knowledge of that great and prolific master. Then there are Vandycks, in the artist's most curious manner, while we should say that the set of Hollars is unique. But they are, nearly all, exhibited in a bad light, crowded upon the screens, and confused in arrangement. Hogarth, Lely, Kneller, and George Vertue are only slightly represented. But the cabinet of engravings is singularly rich, the first impression, in point of order, being an indulgence found in England so far back as early in the fifteenth century; a rubbing from a block, with a quaint inscription beneath the figure :—

> Saint Gregory, with other Popes and Bishops in fear,
> Have granted of pardon XXVI. days and XXVI. thousand year
> To them that before this image on their knees
> Devoutly say V paternosters and V aves.

To those who take pleasure in such relics of that old art which Sir Robert Strange so gallantly defended against the disparagements of the Royal Academy in its younger days, we would point out an engraved title-page, by Thomas Gemimes, mellowed by more than three centuries of time, a portrait of "Robert Dudley, Earl of Leicester," prefixed to the 1568 edition of the "Book of Judges;" William Hob's "George Chapman, the Translator of Homer," a very admirable specimen; and Hollar's "Ancient Habits of the Officers of the Order of the Garter." But it is not to be expected that any very large section of the public will be attracted by the prints, so that we do not linger among them. The casts from antique marbles and bronzes are likely to be more popular; and here it is amusing to note the cost of gathering together, in this particular respect, the materials of a national museum. For the impression from the celebrated Rosetta stone the trustees paid only six shillings; for the head of the Egyptian Pasha, five; for the lid of a sarcophagus, fifteen. The Assyrian sculptures, in plaster, averaged about two guineas each. Indeed, the highest figure is £18, while some of the models were made for half-a-crown. In fact, there are several cupids which were bought for two shillings each; while a reproduction of the famous Elgin tablet was done for eighteen-pence. Who would not have a private collection upon such terms. Yet these are works which throw a wonderful light upon the human imagination in ages bygone, when the birth of the Arts took place and the ideal genius first mounted its throne. It is in the Sculpture galleries, indeed, that, apart from the library, the principal riches of the museum exist; though, once more, it is to be remarked how callously the populace saunters through them for the simple reason that they are not understood. A slight explanatory description, which might be printed within the space of a postal-card, and the substitution of English for Classical terms, might go far towards rendering the institution more educationally valuable. What is the use of telling the working, or even as a rule, the middle classes, that they are gazing upon a votive cippus? What is the meaning conveyed to the illiterate or half-cultured mind? Or, that the next object is a terminal statue? We believe that the public might be treated far better than it is in these matters, for often a concourse would be drawn, could it only comprehend the thing to be seen, by that colossal head of the Goddess of Wisdom, so stern of countenance, with the twisted locks, the serpent—emblem of vigilance—on the summit of the helm, angry and menacing; or that lovely funeral urn, in form not excelled by the Cellini ewer, which gives us indubitable testimony to the costumes worn by the Romans and the barbarous Germans in battle (the former, frequently, wearing none). But whose ashes lay in that silent urn, with its borders of delicate ivy leaves, and lid with the graceful cluster of acanthus? Vain to surmise. Its date, even, is not known. A brief pause, aided by a slight explanatory label, would increase tenfold the significance of the caryatid, or roof-supporting figure, which is among the chief treasure of the collection. Superfically, it seems nothing more than the figure of a proud and melancholy woman. Look again, and it tells us of the dress and ornaments used by ladies in that distant period—all elegance and modesty as they were; the large tunic reaching to the feet, the shorter robe above, the mantle floating from the shoulders, and fastened over them by buttons (why should buttons be called *fibulæ* in penny catalogues?); the fashion of the hair, curled, worn full round the forehead, and confined by ribbons; the ear-rings, in the shape of flowers; and the double necklace. These points should be made intelligible, at least to all sightseers who care to be informed. The marbles, too, which illustrate antique workmanship and taste, including the superb Roman candelabra, might be of eminent use to our art-workmen, were it not that a selfish and pedantic system precludes them from making use of the Museum as a school. The unsurpassed Bacchanal vase, literally fringed with figures of charm and power; the marvellous Venus, composed of two pieces, joined above the thighs with a cunning so subtle that the joint cannot be detected, and half-draped below the rounded splendour of the bust and waist with a material of a lighter tint; the sacred fountain of marble, in the centre of which a piece of leaden pipe still remains—a remarkably interesting circumstance—and, moreover, displaying in its decorations the dawning of a new taste; that mighty Herculean head, from the Grecian chisel, evincing, in its turn, a fresh development of art. All these should be made to speak more for themselves. We shall not now, however, dwell longer upon these marbles, since the opportunity will recur; but we have said sufficient, perhaps, to explain our general meaning. This great Ionic temple is silent when it should have a voice. Thus visitors approaching from the street perceive a series of figures on the tympanum of the portico; but they are blind as to the allegory, in which man is imaged emerging from a rude savage state through the influence of religion, becoming by degrees a hunter and an agriculturist, quitting the patriarchal state, inventing Paganism, dwelling in cities and worshipping the arts, looking to the sun and stars for a Deity; discovering mathematics, the drama, poetry, and music; and thence rising from heathenism to the Christian Era. As it is, this group of gilt is less regarded as an object of admiration than as a dove-cot for the pleasant pigeons that coo there all the day. However, we are promised that the chaos shall partially cease, and that the words *Fiat Lux* will be spoken, even in these dark and half-buried recesses of Bloomsbury, which, with at least a hundred guineas' worth of books upon their shelves relating to the British Museum, are so dim to the common eye.

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NEW HOUSE FOR THE SOCIETY FOR THE PROPAGATION OF THE GOSPEL IN FOREIGN PARTS, DUKE STREET, WESTMINSTER.

THIS society, after many years' search for a house as a suitable centre for its work, has recently purchased the freehold of No. 20 Duke-street, Westminster, and has placed it in the hands of Mr. Butterfield, as their architect, to be adapted to their wants. The alterations which have been made in it comprise, firstly a new frontage towards Duke-street; and inside, in addition to the usual offices for secretaries and treasurers, a small library and museum and an ample board-room and chapel have been formed.

Mr. Butterfield has, under these circumstances, produced a work of considerable interest and individualty, as might be expected of him. The materials are brickwork of various colours for the walling, and freestone for the dressing. There is much irregularity in the general disposition of the various windows of the two lower floors, and diverse treatment of their details. The portal, an erection of freestone, in slight projection from the rest of the façade, has a depressed and two-centred arch, and bears above its cornice a sort of blank parapet, with a panel rising in the centre and enclosing a cross. Folding-doors, with a fanlight in the arched head, occupy the doorway. A pair of two-light windows on the right hand side of the portal, with trefoiled heads, have a shallow buttress, as a framework on either side enclosing them, and rising to the sills of the windows above, the space between the two sets of windows being panelled in stonework. A two-light and a single-light window on the other side of the portal are without this decoration, and a band of diapered brickwork of varied colouring runs above them, marking the division of the floors. A similar band is continued above the ceiling cornice at the level of each of the superior floors. On the first floor there is one large composition of three lights with arched head, with two cusped circles in it, and panelling below the opening a little to the left of the portal; this also has a quaint framework formed by corbelled-out buttresses carrying canopies; on the other side are a pair of two-light windows (plain, but of a strange lenghty proportion) over the centres of those described to the floor below. The second floor has four similar but shorter two-light windows, ranged at equal distances apart, and not therefore corresponding with any of those below them; and above them is a deep parapet and four dormer windows to the roof, which again have some trappings in the shape of corbelled-out buttresses. The effect of the whole is somewhat queer and bizarre, and in point of detail neither very pure Gothic nor very charming. In this example, as in Keble College, Oxford, Mr. Butterfield seems to have altogether changed his style from that in which he wrought the domestic buildings around his church in Margaret-street, and we confess we do not think the more recent an improvement. Still, it is certain that time and London smoke will soon tone down the startling look of this work, which is somewhat at present in what has been called the streaky-bacon style; and there is nothing coarse in the forms, although a certain ungainliness in certain of the proportions and features. The monotony of most of our streets, and of this Duke-street among them, is so depressing, that almost any change is for the better, and we are thankful therefore that Mr. Butterfield has in this manner enlivened it. We cannot help thinking, however, that the probable not far-distant demolition of the whole neighbourhood, which has been marked out as the site of New Government Offices, has made this able architect less careful than he would otherwise have been as to the character of his work, and that it is only to be looked upon as a temporary makeshift at a limited cost.

SUN-BURNERS.

LIGHTING our dwellings and public buildings by means of gas has now become so common that it seems hardly possible to realize how our grandfathers managed in their day with such dim and troublesome illumination as oil lamps and candles then afforded. The convenience of gas is so great, its use saves so much domestic labour, and its application is always so immediate, that housekeepers are induced to overlook many objections that accompany it, whilst in places of business and public buildings, no other means of lighting seems possible, or to be thought of. Besides the supply of artificial light, gas is capable of being made most useful in many other respects about a building, as for instance, for heating and for cooking; for these latter purposes a large number of useful machines are made, but in addition to these, gas may be made, far more generally than has yet been the case, a most effective means of obtaining artificial ventilation. But little has been done so far towards this result, and yet possibly no motive power is so certain and so easily applied. The only approach to such an intention is to be seen in the sun-burners now greatly in use; but even in these machines the ventilation is rather subordinate, and a result growing out of the necessity for getting rid of the enormous heat generated by the combustion of gas itself than an intentional means of relieving the atmosphere of the apartment in which the sun-burner is placed. The principle of the sun-burner is simple, and its application only attended with such practical difficulties as a skilful mechanic can encounter. The machine itself consists of a certain number of burners placed close to the ceiling, enclosed within a glass frame of almost any shape, and capable of great variety of ornamentation, and so constructed that the heated air generated by combustion of the gas is, or ought to be, rapidly carried off into a special flue and discharged into the open air. As an appendix to this, an aperture is made in the bottom of the enclosing case, and a tube is carried also up into the air-duct through which the heated atmosphere in the upper part of the room may be drawn off, and the ventilation of the apartment thus, to a certain extent, be secured. In effecting this, the usual difficulty—down-draught—occurs, and an improvement in the shape of a self-acting valve has been added for its cure. Such, briefly, are the leading features of the sun-burner; an important improvement in our means of gas illumination, and which, on account of its growing use, is well worthy of some special examination and attention.

The first thought that would naturally occur to an intelligent examiner, would be the waste of lighting power consequent on its position so near to the ceiling, by which only reflected rays, and those too downwards, the worst conditions under which they could be conveyed, and the loss of all direct and diffused light. As a consequence, the consumption of gas must be enormously out of proportion to the amount of light obtained, and on inquiry it was found that the gas required for such a sun-burner as would be sufficient to properly light a certain area, would be three to four hundred per cent. beyond ordinary what open burners would consume, and this especially is the case in rooms of moderate size; for instance, an apartment which would be abundantly lighted by five or six fish-tail burners, as ordinarily applied, would require from twenty-one to twenty-five if enclosed within a sun-burner. For very large spaces, such as the interior of theatrs, concert-halls, and the like, the disproportion is not so great, whilst the concentration of light to one central point has many reasons for preference. There is then no saving in cost of gas in the use of a sun-burner, so it must next be questioned what advantages it possesses over other modes of lighting. The first, undoubtedly, is the avoidance of the super-heated air engendered by open lights; but this advantage, apparently evident as at first it may be, is practically not quite so positive. The amount of heat produced by the sun-burner itself is enormous, and rapid as the out-draught may be, the surface of the case becomes so greatly heated that the temperature of the air near the ceiling becomes quickly raised, and in case of an ordinary room of average height must be a great inconvenience. That even this defect may be guarded against will presently be seen; all that now is attempted is to show the action of the sun-burner as it is in every-day operation. The next advantage claimed is the remedy it affords for the deleterious effects of the escape of the results of gas combustion necessarily evolved in the illumination of brilliantly lighted rooms, and this may certainly be conceded, and is a most important point. Could some certain means be made available by which these evils could be avoided in other modes of gas lighting, all the really practical objections to the universal use of gas in our dwelling-houses would be met. This is a question well worth the attention of chemists, who, with positive effects to deal with and such tangible agents as carbonic acid to encounter, should be able to devise some adjunct to gas combustion which might alleviate or remove all these serious evils; possibly, some mechanical contrivance acting upon a vaporizer charged with a proper chemical might be contrived, which in action would not only neutralize the deleterious effects alluded to, but would also assist the ventilation of the room. A fine spray of Condy's Fluid largely diluted, or its evaporation by means of saturated cloths, will, it is known, greatly relieve gas-poisoned air, and until some better plan can be suggested, should certainly be tried. An ornamental saucer appended to an ordinary gas-light, containing cotton or a sponge saturated with such a mixture, will be found to cause an agreeable change in the quality of the air when the room becomes heated.

The advantages claimed then for the sun-burner in its present improved form, are a more agreeable temperature and a purer internal atmosphere, both so important in a sanitary point of view as to counterbalance the additional expense of the large consumption of gas. At first the apparatus so called was a clumsy, unsightly affair, consisting of a large sheet-iron funnel and tube, and under it a circular pipe with burners regularly placed around, the whole casting a black shadow on the ceiling to the destruction of all decorative effect. Added to this, no contrivance had been thought of (or at all events provided) for the prevention of down-draught when the gas was not lighted, so that in the day time the rush of cold air was so unbearable as to suggest the lighting of the gas with its artificial day light as the smaller evil of the two. Ultimately, after many transitions, a perforated frame filled with mica was substituted for the sheet-iron in large machines, and a strong glass globe for the lighting of smaller rooms. A self-acting valve, so constructed as to open simultaneously with the act of turning on the gas and to close when shut off, was contrived, which has satisfactorily accomplished the stoppage of the down-draught. In this form the sun-burner offers a means of depriving the use of gas for lighting large rooms of most of its objections; it remains now to inquire how far the present apparatus may be made subservient to still more general utility.

The machine itself, to begin with, is a patent, and its application requires certain structural conditions which are not always favourable, hence the cost of providing the sun-burner is considerable and unequal. The actual lamp, so to speak, itself is not a heavy item of expense compared with other well-made gas-fittings; it is in the provision of flues and appliances that the working bill gathers a formidable length. Thus it will be seen that the estimates generally supplied give first but the cost of the sun-burner only, without flues and fittings; then comes cost of self-acting valve, then glass decorations, and lastly flues, ornamental or plain, black or galvanised; and to the whole the time of fitting up must be added. As an example, suppose a twenty-jet burner is required (which would be one of small size, suitable for a moderately-proportioned billiard room), the cost of the various patterns of the lamp alone would be from £10 to £17, the valve £5, an 8in. flue pipe, if of plain make, would be from 2s. to 2s. 6d. per foot, a wind-guard or other chimney terminal from £1 to £1 10s., and if ornamental work was required the glass decorative fixtures for a burner of this size would range from £7 to £18. Thus the cost of appliances without fitting up and labour would be from £26 to £46, allowing 10ft. of flue pipe. The further and generally much heavier cost would be caused by the adaptation of the structural arrangements of the already erected building and in an instance under personal observation, the expense of fitting up a burner of about this size in the dining-room of a country house was nearly £200. It will be seen then that for domestic use the sun-burner is not entirely suitable in its present form, although of course, in providing for its introduction in new buildings, the cost of fittings could be most materially diminished. There still remain, however, the objections of great heat derived from the lamp itself—only partially obviated by the hot-air duct which forms a portion of its working features—and the enormous quantity of gas consumed.

It is fair to state that the manufacturers of the sun-burner admit the objections to the use of the light in ordinary dwellings and in rooms of average height, and frankly tell inquirers that they cannot say there is any economy in the arrangement, and that the direct heat is very considerable. Admitting these defects, it is incumbent on all interested in so vital a matter as the comfort and healthfulness of our houses, to endeavour to devise modes of lessening existing objections, and to bring out the advantages which this principle of illumination undoubtedly affords.

In the first place, the great consumption of gas. Much of this is due to the unfavourable position of the burner itself. It is so close upon the ceiling that the rays of light can be deflected downwards only, all lateral and diffused light being entirely lost. This it seems might to an important degree be remedied by modifying the form of the lamp, and by placing the jets, not in a circle on the same plane, but employing larger burners, fewer in number, and in an inverted pyramidal arrangement by which at a lower point one powerful light might burn, and four others some inches above it. Without drawings it is difficult to suggest this, but an examination of a sun-burner will show that no structural detail essential to its principles of action need be interfered with by the change. The frame would come lower in the room, it is true, but it might be made a more ornamental feature, and the light thrown from its curved or sloping sides would be evenly diffused across the ceiling, and help most materially to remedy one existing defect which artists loudly complain of in regard to the shadow or unfavourable light cast upon ceiling decoration. The decorated glass casings already supplied for sun-burners require but slight modification to fit them to the arrangement of burners thus suggested, and as each burner is already a group of smaller jets it would be easy to modify and increase the size of each and proportionately diminish the number. It is a fact well known that the larger the burner the less the consumption of gas in proportion to the illuminating power; so that a good economist would do well to double the size of his jet, and with the same pressure of gas as before he will obtain twice the amount of lighting power.

(*To be continued.*)

METROPOLITAN RAILWAY AND TRAMWAY PROJECTS.

MR. HAYWOOD has presented to the Corporation of London his usual annual synopsis of the distinguishing features of the various schemes for the promotion of railways and tramways which in any way affect City interests.

The first of these is the Pneumatic Railway, projected to connect Broad-street with the proposed Metropolitan station at Cannon-street, which, starting between Bow-lane and Bread-street, will pass under Queen Victoria-street, Mansion-house-street, Threadneedle-street, Old and New Broad-street, and Liverpool-street, to Broad-street, where either an exchange station or a junction will be made with the other railways which will terminate at that spot. The tube will be constructed either of iron or brickwork, and 11ft. high, and the whole of the work will be executed by tunnelling. If constructed, this railway will complete the Inner Circle, enabling passengers by the North London and North-Western lines to reach the West End without leaving the railway system.

The Eastern Metropolitan Railway has for its object the formation of an underground line, commencing, by a junction, with the Underground Railway (Tower-hill Extension) at Meeting-house-yard, proceeding thence by a curve in a south-easterly direction to Whitechapel High-street, near Leman-street. It will be continued along Whitechapel High-street, the Mile-end, and Bow-roads to the North London Bow Station, effecting a junction by an interchange station.

The Holborn Viaduct Station is contemplated for the joint accommodation of the London, Chatham and Dover, the London and South Western, and the London, Brighton, and South Coast Railways.

The Bills for the enlargement of Billingsgate and Leadenhall Markets are introduced by the Corporation itself. The first-mentioned scheme contemplates the enlargement of the fish-market, and schedules the whole of the Custom-house, with its quay, and the whole of Dark-house-lane and the adjoining property. To Leadenhall-market it is proposed to add a space, included by a line on the eastern side of Gracechurch-street from houses 72 to 91 inclusive, Half Moon-passage, Leadenhall-place, Lime-street, and Ship Tavern-passage.

The Government introduce the Bill for erecting the New Mint, and have selected as its site the open space on the Victoria Embankment next the Gas Works.

Five tramway schemes seek Parliamentary sanction:—The *Oxford-street Line*, which, commencing in the west, enters the City at Holborn-bars, passes through Holborn, down Charterhouse-street, turning northwards into Farringdon-road; the *Holborn Viaduct Line*, starting with a junction with the last-mentioned line at Holborn-circus, and proceeding thence by a double line over the viaduct to Giltspur-street; the *Smithfield Loop-line*, commencing in Farringdon-road by a junction with the Oxford-street Line, and thence to be carried along Charterhouse-street, past the western part of the Meat-market, along Giltspur-street, to a junction with the Holborn Viaduct Line near Newgate-street; the *King's Cross and Blackfriars Bridge Line*, which will enter the City near Charterhouse-street, in Farringdon-road, and effecting junctions with the Oxford-street and Smithfield loop-lines, proceed by a double line along Farringdon-street, New Bridge-street, and Blackfriars Bridge to Stamford-street; and the *Angel (Islington) and General Post-Office Line*, which, entering the City in Aldersgate-street at Fann-street, terminates near Newgate-street.

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A committee has been formed to carry out the re-seating and warming of Dunmow church.

The new church schools at Myland, near Colchester, are approaching completion.

OLD LONDON.

"NOTES on Old London, Architectural and Engineering," was the subject of a paper read on Friday evening last, before the Civil and Mechanical Engineers' Society, by Mr. C. H. Rew, hon. sec. of the Society. After briefly touching on the rise and early history of the City, Mr. Rew proceeded to describe the old London Wall, with its several gates, remarking that the most important part of this old civic boundary now standing is a long piece of wall, with a circular tower or bastion at the western end, situate at the back of Cripplegate Church. It is about 20ft. high, has a weathering course about 7ft. from the ground, and seems to have had for a coping a course of gabled masonry. The materials of which the wall was constructed were (so far as existing remains afford means of judging) a yellowish-grey stone, in irregular courses and stones of all sizes, and the mortar is in some places standing quite out to the weather, while the adjacent stone is altogether perishing. Some small portions seem also to have been built of flints, with one or two courses of larger stones for foundations, on which were two courses of tiles of rather more than 1ft. in superficial area, and making with the joint a solid course of about 6in. thick. After referring to the building of the Tower, Mr. Rew stated that bricks were first used for the building of houses in London in the reign of Edward IV.; and in the same reign cisterns and conduits for water were constructed, and the city was first lighted at night by lanterns, but this lighting must evidently have been of the most imperfect and crude description, for so late comparatively as the year 1685 it was thought a very great step in advance of all previous efforts in this direction when Edward Hemming obtained letters patent for the sole right of lighting up London. He undertook to place a light before every tenth door on moonless nights from Michaelmas to Lady Day from 6 to 12 o'clock. As the city grew in size the necessity for a fresh and pure water supply grew stronger, whilst the possibility of obtaining such a supply from the river became less and less. After much squabbling between the citizens and the Corporation as to taking the initiative in carrying out works for supplying the City with pure fresh water, Mr. (afterwards Sir) Hugh Myddelton came forward, and with great difficulty succeeded in completing the well-known New River system. The water first entered the metropolis on Michælmas Day, 1613. The water was at first distributed throughout the City by pipes of wood, principally elm, but the leakage was so great in ordinary weather, and fractures through frost were so frequent and serious in winter, that before long the wooden pipes (of which there were in use 400 miles in the different parts of the City) were replaced by pipes of cast-iron. The cost of the New River was about £18,000. Sir Hugh died in December, 1631, and was buried in the Church of S. Matthew, Friday-street, a building which, in common with so much more of Old London, disappeared in the Great Fire of 1666. Mr. Rew next proceeded to describe the Tower, as it was and as it is. In the north-west corner of the Inner Ward is the Chapel of S. Peter-in-Chains, dating from the year 1272, but a much finer church stood here, built by Henry I. in 1100. As it now stands it is a plain stone building, consisting of a nave and one aisle. The Chapel of S. John, in the White Tower, has an apse at the eastern end, and an aisle on either side of the nave and around the eastern apse. The piers, arches, and walling are of well "axe-dressed" stone, and are of what is known as "thick-jointed masonry"—the thin joint being introduced at the same time as the chisel took the place of the axe in the actual working of the stone, about a century later. Old London Bridge was next described, and its history briefly narrated; after which the splendid church of S. Saviour's, Southwark (more properly called S. Mary Overy), was commended as well worthy of notice, though the choir alone remains of the original church. Passing on, Mr. Rew rapidly reviewed the influence exerted on the characteristics of Old London by the various religious communities—such as the Black Friars, White Friars, Austin (or Augustine) Friars, and Grey Friars, each possessing extensive ranges of buildings. The construction and history of the old Cathedral of S. Paul's were next adverted to; followed by references to the Temple (with its famous church), the Savoy Palace and Chapel, and the old palace of the Dukes of Somerset. The author then dwelt at great length on the Royal Palace and Abbey of Westminster; and leaving the Abbey precincts, and taking an imaginary walk up Whitehall, noticed the Old Whitehall Palace, the predecessor of Inigo Jones's Banquetting Hall. Proceeding past Charing Cross, Covent Garden, Whitefriars, and Blackfriars (as they existed in Mediæval times) were described. Brief references to Smithfield, to the Church of S. Mary-le-Bow, Cheapside (literally S. Mary of the Arches—being so called from its having been the first church which had an arched or bowed ceiling to the crypt), and to the Guildhall, brought a very interesting paper to a conclusion.

A short discussion ensued, the speakers being the President (Mr. J. B. Walton, A.I.C.E.), Mr. A. C. Pain, A.I.C.E.; Mr. W. Meakin, Mr. R. M. Bancroft, Mr. H. E. Hunt, &c.

BOOKS RECEIVED.

Brief Chapters on British Carpentry: History and Principles of Gothic Roofs, by Thomas Morris, architect (London: Simpkin, Marshall & Co.), is an attempt to record the more prominent artistic incidents of carpentry as practised in this country. The author acknowledges his indebtedness to the BUILDING NEWS for the execution of the illustrations, and other facilities which have accelerated the appearance of the work. He might have added for its first appearance, which was effected in these pages, and which renders it unnecessary for us to do more here than mention its separate publication.

The Schools for the People. By George C. T. Bartley. (London: Bell & Daldy). Just at the present time this work will prove of great value. It contains no suggestions or officious pieces of advice as to our future course in the great educational work inaugurated last year by Mr. Forster, but supplies a comprehensive history of the methods of education pursued in this country during the last three hundred years. Beginning with the schools attached to the religious houses, which perished when they perished, to give place to poor-laws, pauperism, and gaols, Mr. Bartley goes on to describe the grammar-schools which next became their inefficient substitutes, the parochial schools, which in their turn, succeeded the grammar-schools—and which in some degree resembled the monastery schools, inasmuch as they were only maintained by the charity and self-denial of the clergy—and the various systems of education which have been on their trial during the present century. The work is well printed and illustrated, and no pains have been spared to render it a standard work for present and future reference.

The Year Book of Facts in Science and Art, by John Timbs (London: Lockwood & Co.), demands, we suppose, the usual mention of its appearance: it is all it merits.

The Student's Guide to the Practice of Measuring and Valuing Artificer's Work. Dobson & Tarn. (London: Lockwood & Co.) Originally edited by Mr. E. Dobson, this work is rendered additionably valuable in the present edition by the introduction of fresh matter by the editor, under the auspices of Mr. E. W. Tarn. The work is well turned out, and will remain a reliable text book.

Atchley's Estimate and Price Book for Civil Engineers and Contractors. (London: Lockwood & Co.) This price book is this year published by Messrs. Lockwood & Co. Its contents are of the same character as usual.

The Essentials of Geometry, by J. R. Morell (London: Griffith & Farran.) Euclid will not probably remain much longer the only required text-book of geometry in our schools. Its defects are recognised even by so great an authority as Todhunter, and its cumbrous repetitions have long been felt to hamper its explanations. The treatise under notice is one of the best attempts we have seen to provide a substitute.

The City of London Directory for 1871 (London: W. H. Collingridge.) This directory is the first of its kind. It is well arranged and printed, and contains, besides the usual features of a directory a variety of useful and valuable matter. Viewed solely as a directory, however, we cannot but think it next to useless. What *is* the use of a *directory* to any business man which confines itself to the limits of the City proper? which shuts out such streets as the Strand and Regent-street, Holborn and Oxford-street, and which for all business purposes belong as much to the "City" as Cheapside or Cornhill.

ARCHITECTS' *versus* ARCHITECTURAL SOCIETIES.

THERE is, and there surely ought to be, a considerable difference between an architectural society and a society of architects. The former may be supposed to busy itself with the fine art, Architecture. Its members may be, but need not of necessity be, professional architects. They may be and they are, in the case of many famous architectural societies, made up in great measure of amateurs—witness the Oxford, the Worcester, the Yorkshire, Architectural Societies, whose amateurs form the very bone and sinew of those vigorous confraternities. These amateur students of the art have, with their Paleys and Pettits, their Pooles, Freemans, and Hugos, their Willises and Cuttses, contributed no little to the advancement of our architectural lore. We have heard architects stigmatise them, in sheer oblivion or downright ignorance of the catholicity of art, as "idle parsons." Such men consider that no one but an architect should write or speak about architecture! We venture to assert that the standard writers on the subject are not ordinarily architects, but amateurs. We happen to possess, naturally enough, practical architects who have written on their art; men such as Chambers, Gwilt, Sharpe, Street, Pugin, Scott, Cresy, Burges, and a few others. It is a *laborious* "labour of love" to think of the few (the very few) names; not so laborious a matter to refer to the amateurs we have named—all of them standard writers on the art—or to add to the list a few more, that will at once occur to every architectural student—Evelyn, Aldrich, Milner, Rickman (no architect when he wrote his "Attempt"), Rock, Fergusson, Ruskin, Leeds, and a host of other amateurs.

Do we say this to the disparagement of professional architects? Not at all. But why do we draw this comparison? Simply to remind our professional readers of a fact they are too prone to forget, that, while every society of architects is, and ought to be an architectural society, capable, like the amateur societies of "idle parsons," of discoursing on the art, Architecture, it by no means follows that every architectural society is a society of architects. The amateur societies have one topic of discussion ever before them—Architecture, the Fine Art; but a society of architects has, or ought to have, two other topics ever in view—their "trade" or practice as architects, and the sciences in connection with its pursuit. Some one the other day assumed (it is an old assumption) that architecture is not only an art but a science. It is nothing of the kind. There is no such a thing in existence as the "science" of architecture. But this by the way.

We say our professional readers are apt to forget the distinction just laid down. They form themselves into clubs of architects and idly let them settle down into mere architectural societies. It is the special weakness of the Royal Institute of Architects to fall into this mistake. It is ever on the alert to emulate the Archæological and other amateur societies in the conservation of national or civic antiquities; to bandy compliments with distinguished foreigners; to profit by the delivery of learned papers by amateurs, clergymen, engineers, barristers, and the like. These things are all well enough in their way; but we wish, when others of even greater consequence to *architects* crop up from time to time in the course of a session, the Institute would not evince so perverse a *penchant* for stamping them out, or, to use a milder phrase, throwing cold water upon them. It is not pleasant for English architects to hear, as they have lately done, that the Institute is not an educating body; nor to see the laudable efforts of the Association to inaugurate and keep up for years an Architectural Exhibition treated with a sneer; nor is it at all encouraging to see Fellow after Fellow rise at a meeting to silence a professional inquirer as to what is and what is not the Institute's view of a question of professional emolument. Matters such as these may be utterly indifferent and uninteresting at an architectural society; but we really do not see how they can be ignored and pooh-poohed at any society of architects.

We should like to see the Institute flourish; it is our only chartered society of architects; and all English architects have an interest in seeing it respected—if only because it *is* a chartered society, and numbers among its members our most distinguished practitioners. The Architectural Association has, however, far higher claims than this to the sympathy of every English architect; and really, without that energetic society to urge it on to action, we often wonder what real good the Institute would ever have effected! The younger society may have failed in establishing the Architectural Exhibition: it is a truly creditable failure; and the memory of the attempt is a possession to be envied. Let us all say of it

> Non tam turpe fuit vinci quam contendisse decorum,

and remember that other laudable efforts of the Association have been crowned with success. What to day is the proudest feather in the cap of the Institute? The establishment of the Voluntary Examinations. Would the Institute have ever inaugurated them but for the persistent cry of the Association?

It is pleasant to end with a hopeful allusion. Great credit is unquestionably due to the Institute for what it has already effected in the Voluntary Examination case. It is cheering to learn that these examinations are likely to take a more popular form; that the passed candidates, who already receive a written certificate of merit, are to have some further unmistakeable mark or recognition, such as a minor degree, conferred upon them. Of course not every "graduate" will make a good architect; but while this is true, it is undeniable that every good architect will be a better one by becoming a graduate. We sincerely wish success to the movement. It is one we have for years advocated—the beginning, we trust, of the end so much to be desired; when none but graduates of the Institute shall be eligible as either Fellows or Associates. The step to be taken is worth all the fortnightly papers, all the coffee, all the conversazioni, aye, all "the Consols," put together. These, after all, are but the appendages of a popular architectural society, while the graduate scheme will lift the examining body into the far nobler position it ought long ago to have assumed—that of an Institute of Architects. S. S.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary meeting of this Institute on Monday evening last, Mr. Thos. Henry Wyatt (President) in the chair, a paper by Mr. W. H. Barlow, C.E., "On the Roof of S. Pancras Station," attracted a numerous audience. The paper was illustrated by several very large and beautifully-executed drawings on background.

The author stated in his preliminary remarks that the large arch which constituted the truss adopted in the S. Pancras' Station owes its origin to the floor beneath it. In order to economise space to the utmost, it was determined to employ iron columns and girders instead of brick piers and arches to support the platforms and rails of the passenger station. One consideration in adopting this plan was the floor-girders across the station formed a ready-made tie sufficient for an arched roof crossing the station in one span; all that was required to obtain a roof of this construction being the arch or upper member of the truss, of which the floor-girders would form the lower member. Amongst other advantages claimed for this arch, one was that as the weight of the roof was carried at the floor-line, and did not rest on the tops of the walls, there was no necessity to make the side walls thicker; for not only was the weight on the top walls avoided, but also the rocking motion from the expansion and contraction of an ordinary roof, which, though it may be mitigated, is not prevented by the use of roller-frames at the feet of the principals, and appliances of a like nature; and farther, as to the question of expansion and contraction of the arched roof, the ties being beneath the ballast the temperature would vary so little that no provision would be necessary, and the only effect would be a slight rise or fall in the crown. Lastly, the adoption of a single arch would not only save the cost of the columns and their foundations, but also that of the longitudinal girder required to connect them at their upper extremities, with a valley drain between the roofs, vertical drain pipes, and other provisions for taking off the water from the area between the centre lines of the two roofs, which would have been about two acres. All the circumstances combined tended to favour the idea of one arch across the station, the remaining question being what depth and form of rib, and what additional material must be employed to make an arch which would retain its form under all the conditions of stress to which it would be subjected. The results arrived at, partly by calculation and partly by experiment, were—

1st. That the depth of the rib must be sufficient to contain all the lines of pressure generated by the dead load, by snow, and by the pressure of the wind.

2nd. That the sectional area of the metal should be sufficient to sustain the whole stress without producing a strain on the iron exceeding 3½ tons per square inch.

3rd. That the arch should be rivetted together with proper joint-plates throughout, so as to give it the advantages of complete continuity.

The additional cost of principals of 240ft. span, as compared with principals of two spans of 120ft., was estimated at about £6,000; but the great object being to obtain perfect freedom in the use of the whole area of the station, unembarassed by columns and other impediments, instructions were given for an arch in one clear span. The total area roofed in is 18,822 square yards; the distance between the side walls is 245ft., and the clear space of the roof 240ft. The arch was made slightly pointed at the top, because it was considered that this form possessed advantages in resisting the lateral action of the wind and to have a better architectural effect by giving, a defined apex to the interior of the roof. The main ribs, or principals, are made of channel and plate-iron, and are 6ft. deep, and the total weight of each rib is 54 tons 16cwt., and the cost of each rib was £1,132 4s. The erection of the roof was effected by two large timber stages, each made in three divisions, so that either part could be moved separately. The stages were 40ft. in width, and contained about 25,000 cubic ft. of timber and 80 tons of iron work. The weight of each stage was about 580 tons; and with two ribs on it, the weight on the floor girders, including men and apparatus, was about 650 tons. These stages were designed by the Butterley Company, who were the contractors for the roofing and lower floor.

In the description of the process of erecting, it was stated that the time required for putting up the pieces and rivetting, after the feet were fixed, was six days for each rib; and the last 14 principals were erected in 17 weeks, including delays from weather, &c.

The whole of the ironwork having been fitted at the Butterley Works, it was put together without difficulty. The greatest depression of any rib when the centre was struck was only a quarter of an inch, and the average was 3-16ths of an inch.

The construction of this roof involved the problem of the continuous elastic arch, capable of retaining its own force without any intermediate connections with the tie or any aid from spandrels. With the view of securing ample margin for safety, and to remove all doubt on the question of strength, the arch was designed so as to be capable of bearing an assumed load of 70lb. per square foot in addition to the weight of the principals, with a stress of metal not exceeding 3½ tons per square inch, or a load of 56lb. per square foot with a stress of 3 tons per square inch. The sectional area of the rib is 46 square inches—viz., 23 square inches on the upper and lower flange. The reason for adopting so low a pressure at St. Pancras was that in an arch of this form, and especially under the lateral action of wind, the line of pressure deviates more or less from the centre of gravity of the section. The effect of such deviation is to throw more pressure on one member of the rib than on the other; but the amount of the difference so arising is controlled and modified by the depth and stiffness of the rib in resisting flexure, and also by the extent to which the channel-iron cross-bracing causes the pressures acting on one member of the rib to be transmitted to the other. Although the roof is independent of the side walls, in so far that it does not rest upon them, yet the weight of the side walls, taken in connection with the manner in which the pedestals or feet of the principals are built in, contributes to the strength of the roof by giving stiffness at the springing.

The roof, as designed, had twenty-four main ribs, and one gable or screen at the northern end. The southern end was intended to terminate against the walls, in the same way as the roofs of the Cannon-street and Charing-cross stations; but the acceptance of Mr. Gilbert Scott's design for the station, offices, and hotel led to this arrangement being departed from. In the original design, the hotel was carried over the upper portion of the southern range of station offices; but as it was feared the steam and smoke of the engines would find entrance into the hotel windows, Mr. Scott planned a second gable and screen for the southern end, so as to separate the passenger station from the hotel buildings. This second screen involved an additional main rib, and, to this extent Mr. Barlow's original design has been departed from. The cost of the roof, as it stands in the finally-settled account, is as follows:—

	£
For the twenty-four main ribs, with foundation bolts, castings for ditto, ornamental spandrils, and moulded bases, &c., ...	27,187
For the covering, including plate-glass, lead-work, purlins, intermediate ribs, wind-ties, gutters, ventilators, gangways, &c.,....	26,296
Total cost of roof, excluding screens	£53,483
For the north gable	7,375
For the additional main rib, spandrels, &c., at the south end	1,132
For the southern gable	7,375
	£8,507

The total cost of the roof per square of 100ft. superficial, excluding screens, was £31 11s. The additional cost per square of the north screen was £4 7s; and of the extra rib and south screen £5.

On the question of colouring, Mr. Barlow went on to remark, there were two considerations involved, one being the best colouring regarded as a question of ornament, the other being the best colour in respect of its permanency, having regard to the uses for which the building was intended. Had it not been that the roof in question was for the special purpose of a railway station, Mr. Barlow said he would have endeavoured to select colours solely with a view to the best effect in ornamentation, but he had observed in the roofs of railway stations that the steam from the engines condensed on the metal, especially about rivets and other projecting parts, and that the condensed steam ran down in small streaks, which became stained by the smoke and dust of the station. This effect was observed to take place on the ironwork, but not on the woodwork, the latter not being so good a conductor of heat; and it was therefore thought that however agreeable the appearance might have been rendered in the beginning by light and ornamental colouring, yet that this appearance would have been rapidly destroyed from the causes mentioned, and would require to be maintained at the cost of frequent repainting. It was also found that there was a great diversity of opinion as to what colours should be used, even looking at the question from a purely æsthetical point of view. Considering, on the other hand, the possibility of arriving at a wrong conclusion as to the best artistic effect, and on the other, the probable rapid disfigurement of the work from the causes above referred to, it was ultimately decided to employ French white for the woodwork, and chocolate colour for the whole of the ironwork, which colours so far as experience has extended, appear to possess the quality of endurance as applied to the respective materials of wood and iron.

A vote of thanks to Mr. Barlow for his paper having been proposed by Professor Donaldson, seconded by Mr. C. Barry, both gentlemen expressing their unqualified admiration of this gigantic structure, an animated discussion took place upon various points of principle and details of construction, sustained by Mr. E. I'Anson, Mr. E. Hall, Mr. C. Fowler, Professor Kerr, Mr. Rickman, Mr. G. Aitchison, and Mr. C. F. Hayward. Mr. Barlow ably replied to the numerous questions put him, and to the points raised in the course of the discussion; and the vote of thanks to that gentleman having been passed with great cordiality, the meeting adjourned.

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LIMES AND CEMENTS.

LIEUTENANT-COLONEL SCOTT, R.E., delivered his third lecture on limes and cements before the Architectural Association on Monday evening last. In this lecture Colonel Scott took up the question of sand for mortar, a question which, he observed, was a most important one, and one on which there was a great diversity of opinion in the building world, and for many of these opinions there existed very slight grounds. The idea was very general that mortars were improved by the addition of sand. The lecturer said he had no doubt whatever that that idea arose in the first instance from the observation of lime used as stucco. If a very plastic mortar were employed for coating a wall, as it dried it might shrink and show ugly cracks. In proportion as sand was mixed with the plastic material the tendency to crack was got rid of, but the difficulty of making the compost adhere to the wall was augmented; it worked "shorter" as the quantity of sand was increased. The medium required was just between that degree at which the cement would crack from the heat of the sun, and that at which it could not be used by the workman. There was, however, very little foundation for the generally-received opinion as to the action of sand in mortar. Vitruvius gave some reasons why he considered sand to be beneficial. He preferred "three parts of sand, if the sand is fossil" (*i.e.*, pit sand) "with one part of lime; and he says "if the sand is river-sand add two parts of it to one of lime." He went on to say that "the weight of the lime, after calcination, is diminished about one-third by the evaporation of the watery parts; from this it results that the pores, being empty, are better fitted than before to receive the admixture of sand, and to unite strongly with the blocks of stone to form solid masonry." The lecturer remarked that it was hardly necessary to say that there was a great deal that was fanciful in all that. Another attempt to account for the supposed advantage derived from sand was made by Perrault, who endeavoured to prove that Vitruvius was correct, and went on to state what was the opinion of chemists in his day. Speaking of the causticity of lime, Perrault says:—"When this property acts on the sand and on the stones, it brings out of them with time a part of the sulphurous and volatile salts which they contain, and produces between them so strong an adheison as to form a solid and hard body." On this passage Lieutenant-Colonel Scott observed that sand, almost a pure silica, had neither sulphurous salts nor volatile salts in it, and was therefore quite incapable of being thus acted upon by lime. People assumed, from imperfect observation, that sand was beneficial to mortars, and then sought for fanciful reasons in support of such assumption. Belidor was of opinion that between two and three parts of sand were necessary to one of mortar. Rondelet came to the same conclusion arrived at by Belidor—that it is necessary to mix one part of slacked lime with two parts of river sand, but that if a better lime is used, more sand may be employed. He went further, and said:—"In order in all cases to make a proper mixture, a certain amount of experience is required to judge of the degree of consistence which well-slaked lime and mortar sufficiently mixed should have." He also stated that he had travelled in different parts of the world: "In all the parts of France and Italy through which I have travelled, I have questioned those workmen who appeared most intelligent. I have found that their knowledge reduces itself to a practical knowledge which usage and experience render sufficiently sure." . . . . "A workman, who by a long experience is accustomed to judge if the mortar is fat enough, enough worked, and if it has the consistence it ought to have, is rarely deceived; he beats and mixes the different ingredients of which it is composed until he has hit off the point he aims at," which point, observed the lecturer, is that which the skilful workman found to suit him best. Dr. Higgins had also written upon the subject, but most of his experiments were made upon stuccos, and his experience, therefore, should be looked at from that point of view. He made all his experiments by weight, and prescribed that no more than one part of lime to seven of coarse sand ought to be used in mortar to dry quickly; and less lime might not be used, because it did not render the mass sufficiently plastic for building or incrustation. The lecturer accounted for the discrepancy between Higgins's and Rondelet's statements in this way: Dr. Higgins, although concluding the proportions named (about 3 to 1 by measure) to be the best for building purposes generally, arrived at them by experiments made with reference to stuccoing; for which purpose freedom from shrinkage was a more valuable property than freedom in working. He decided, in reality, on the most plastic composition which did not crack in drying. Smeaton went a step further, and gave some sufficient reasons why sand should be used. He thought sand made a harder mortar, thus improving its quality while adding to its quantity. He says:—"The experience of ages has shown that a considerable quantity of sand and other matter may be introduced with advantage in the making of mortar, but the proportion has never been agreed in; yet from common experience it appears that there is scarcely any lime but what, if well-burnt and beaten, a load or measure of lime will take two loads or measures of sand." Still pursuing the subject, to see how far the admixture of sand with lime could be carried, Smeaton further says:—"It appeared that even yet a greater proportion of sand could be introduced, but to bring it to a proper consistency and toughness, so as to be a good cement to large stones, I found it needed so much more beating that the labour became in most cases of more value than the saving of materials." On another point he says:—"As the lime will receive the most sand in that way" (*i.e.*, if the sand is coarse), "without losing its plasticity, it will of course make the hardest and firmest mortar." The lecturer remarked that this idea of there being some connection between the toughness of the mortar when wet and its hardness when well set ran through the writings of all the authorities he quoted. Vicat, writing on the question of sand, drew equally nice distinctions with those which had previously been quoted with reference to the various methods of slaking between the composition that should be given to mortars according as they are made from fat or hydraulic limes—as they are slaked by the ordinary method, by the method of immersion, or by the spontaneous action of the atmosphere—and according as they are intended to exposure to weather, to damp, or vicissitudes of heat and cold. He says:—"The addition of sand is injurious to rich limes, very serviceable to the hydraulic and eminently hydraulic limes, and is neither beneficial nor injurious to the intermediate kinds." Now it was generally believed, observed the lecturer, that if any lime was benefitted by the addition of sand, it was a pure fat lime, yet Vicat said that rich limes were injured by their admixture with sand. Colonel Raucourt de Charleville came to the conclusion that if the sand was harder than the cement, the more of it there was in a mortar the better and harder that mortar would be; but he objected to smooth sand. In every respect he drew distinctions (similar to those made by Vicat) between the capacities of different descriptions of lime for being benefitted by the addition of sand. Pasley did not get over this tendency of the world generally to stick to the long-received opinion as to the benefit which limes received from their mixture with sand. "We found," he says, "by repeated experiments at Chatham, that one cubic foot of Halling lime weighed nearly the same when fresh from the kiln; and, by the gradual addition of water, that it dilated to the same increased bulk in the state of quick-lime powder; but when worked up into mortar, not too short for use, that it would not bear quite so large a proportion of sand as the common chalk lime had done." Hence, he concluded that, "it follows that the hydraulic limes ought not to admit of so much sand as chalk, but that they will bear more than cement without being injured." Of course in this case Pasley was speaking of Roman cement, for at the time he wrote Portland cement had not been invented. In another part of his work Pasley wrote of the proportions of lime and sand that made mortar fit for use, and of mortar that could not have borne more sand without becoming "short." After making some experiments on the point, he writes:—"Contrary to our former opinion, which was chiefly derived from the apparent shortness of the mortar made from three measures of sand to one of lime," it had been so far disproved as to show "that, although a mixture of two of sand to one of blue lias still appears to make the best mortar, yet 3 to 1 does not spoil it, as we formerly believed." In Pasley's mind there existed the old notion as to there being some necessary connection between plasticity in working and hardness in setting. Treussart (who had made, perhaps, more careful experiments on the subject than any other man) was also possessed with the same idea, and only gave up the notion with very great difficulty indeed. He says, with reference to the first set of experiments which he gave :—"I regret not being prepared for this superiority of the hydrate [he means by this the lime without sand] over mortars, but I was far from expecting it, otherwise, after having made the experiments with the limes alone, I should have made mortars by adding successively ¼, ½, ¾, &c,, of sand, so as to judge better of the effect of sand; but it was only on breaking the mortars at the end of the year that I could know the effect, and I have often on such occasions obtained results that surprised me." In remarking on the results of some experiments made with a view of determining the effect of sand, he stated that the best result followed with one part of lime in paste to one of sand; but he says he did not anticipate that there might be hydraulic limes which would bear a still smaller quantity of sand, or he should have made trials with other limes, "in order to know if the sand added in the composition of mortars always, or only with some peculiar limes, diminished the resistance of hydrates." He was very unwilling indeed to give up the idea that sand strengthened limes until his own experiments obliged him to do so. Belidor, Rondelet, and Pasley, all thought that hydraulic limes would not stand so much sand as the fat limes would; while Vicat, as he thought, experimentally proved that fat limes stood the least sand. The common opinion in the present day, remarked the lecturer, was that fat or pure limes would take the most sand—and in one sense they undoubtedly would do so. Vicat and Raucourt were of opinion that fat limes were injured by sand; Pasley thought that cements were injured by sand; Raucourt finally came to the conclusion that all limes were injured by sand; and experiments made of late years by Colonel Totten, in America, have borne out that view.

Before coming to any final conclusion on the question as to where sand might be advantageous or otherwise, the lecturer said it would be well to take into consideration the facts which bore upon the hardening of mortar. It was very possible, he remarked that, without any chemical action at all, the application of so plastic a material as lime-paste between the grains of sand would result in securing considerable mechanical adhesion. Then there was considerable cohesion amongst the particles of lime themselves. Then there was the possibility that (owing to the use of sand) in making a fracture across a mortar-joint, the line of fracture might be made to take a longer course than would be anticipated—there might be a sort of interlacing between the particles of sand, something like the bond in brickwork. Because sand did not always strengthen mortar, but often the reverse, it was not to be supposed, however, that under no circumstances could increased strength be given by the use of sand. If two bricks were cemented together, the one over the other, the addition of sand to the mortar might possibly give greater strength, because as limes set in great measure by the action of the carbonic acid gas of the atmosphere, the sand might, in such a case, particularly if coarse-grained, give greater facility for the gas to get into the pores. But this would not apply to cases in which the mortar was placed well in the interior of the work, where the carbonic acid gas could not get to it. In such cases, where the material was such as would never of itself get very hard, the cohesion must be very large. Wherever experiments had been made under such circumstances, the sand had resulted in decreasing instead of increasing the strength of the mortar. As to the nature of the sand to be used, there was very conflicting evidence. Vitruvius preferred pit-sand fresh dug; Belidor preferred river-sand; Perrault thought that the white sand was the best; Belidor said that colour had nothing to do with it; Rondelet came to the conclusion that the best sands were neither sharp nor smooth, and that those deep in colour were better than the yellow sands. The only point on which they all agreed was that the sand should be clean, and this point was, as practice showed, of the very utmost importance. A very small quantity of clay, indeed, was quite sufficient to make the mortar moulder; from one-seventh to one-eighth would make the frost attack the mortar. All clayey or loamy sand should, therefore, be very carefully washed. The authors quoted did not agree as to the action of sea sand. Most of them were of opinion that it made bad mortar, though some said that it gave good results. Treussart thought that, on the whole, a fine sand was better than a coarse sand. Vicat gave a great many results of experiments tending to show that various sorts of limes and cements required sand of various degrees of fineness or coarseness; but inasmuch as each author invariably contradicted his predecessor, the lecturer thought it might be safely assumed that it was pretty much a matter of indifference what the nature of the sand might be so far as regarded the size of its grains. Sea-sand, as he had before said, was proscribed by most authors; but some particular cases were mentioned by Alberti, Davy, and others, in which benefit accrued from its use. Smeaton used it in the construction of the Eddystone Lighthouse, and found that the lime was not injured by it. Partington went at great length into the action of the various kinds of water used in making mortar—spring, rain, river and sea. Colonel Totten came to the conclusion that limes were weakened by the use of sea-sand. Endeavouring to reconcile the conflicting opinions on this point, the lecturer remarked that if sea-sand were employed for plastering it always, as was well known, kept the work damp. This was caused by the chloride of sodium of the sea-water, which combining with the lime, produced chloride of calcium; some of the soda was set free, and the chloride of calcium, getting a little dry during hot weather, when a damp day came it invariably attracted fresh moisture from the atmosphere, and always kept the work wet. If sea-water or salt sand, therefore, was used in conjunction with pure limes, the mortar resulting would never get dry. With hydraulic limes, however, the case was different, for mortar made with such limes must be kept moist to ensure the formation of the silicates and the hardening to the requisite degree. Therefore one man experimenting with fat limes would come to the conclusion (and very properly so) that sea-sand was injurious for use in compounding mortar; while the one who experimented with hydraulic limes would conclude (quite correctly) that sea-water was beneficial. But sea-water should never be used for plastering.

The lecturer next proceeded to speak of other substances which were sometimes mixed with sand, remarking that in this country, formerly, puzzolano and trass were largely used to improve the setting properties of limes. Both these substances resulted from volcanic action. Trass contained 49 per cent of silica, and nearly 4 per cent. of potash and soda. Puzzolano had rather a smaller proportion of silica (44 per cent.), but more potash and soda (5½ per cent.). Each substance also contained a little lime and some oxide of iron and alumina. When these substances were heated together with silicic acid the tendency to form silicates was very much increased. In trass and puzzolano the baking action required to bring about that condition had been done by Nature; each substance afforded in itself a kind of cement to begin with. The invention of Portland cement, however, had caused those materials to go out of fashion, as the result obtained by their use was not so quick in action as that got by Portland cement, nor, indeed, was it so perfect.

In conclusion, the lecturer described the various methods of lime-burning, and the kilns used, but as this part of the lecture involved repeated reference to the diagrams on the wall, we cannot give it *in extenso*. Nor, in fact, is it necessary that we should do so, as the subject was not long since treated of very fully in these pages by Mr. Gilbert R. Redgrave. Suffice it to say, therefore, that of the three principal forms of kiln he mentioned, the tunnel kiln, the flare kiln, and the so-called American kiln, the lecturer preferred the last named, somewhat modified, as in use at Rudersdorff and elsewhere.

The fourth and last of this interesting and valuable course of lectures will take place on Monday evening next.

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The Braintree Independent chapel is about to be greatly altered and added to, at a cost of upwards of £1,000.

The Austrian Government has determined not to abandon the proposed International Exhibition at Vienna in 1873.

THE GRAND ORGAN IN THE TOWN-HALL, LEEDS.

We give this week the elevation of the organ erected by Messrs. Gray and Davison in the Town-hall, Leeds, and a few particulars of it may not be without interest to many of our readers, as it is one of the largest and most complete instruments in the world. It contains no less than six distinct organs, acted on by four manual claviers, the compass of each being from CC to C in altissimo, 61 notes; besides the pedal organ, which extends from CCC to F, 30 notes, 117 stops, as well as 17 combination and other pedals for various movements, and 6,500 pipes, viz. :—

Solo Organ	506	Pipes.
Swell Organ..........	1440	"
Front Great Organ	1159	"
Back Great Organ	1152	"
Choir Organ	1123	"
Echo Organ	520	"
Pedal Organ..........	600	"
Total	6500	"

The great organ consists of two complete and distinct organs of different powers and qualities; and the echo organ constitutes a complete little organ of six stops, the pipes of which are of small scale and voiced on an extremely light pressure of wind; they are placed within the box of the swell organ, and can be played by either the swell or choir clavier.

The mechanism, pipes, &c., are placed on four floors. On the first, or ground floor (which is the top of the orchestra, and 16ft. from the floor of the hall), is arranged the greater part of the mechanism; on the second floor, are arranged the the great and pedal organs; on the third floor are the swell, echo, and choir organs; and on the fourth floor the solo organ, in two separate boxes. The pipes are distributed over several windchests, so that the tuner finds no obstacle in getting at any part of the organ.

The difficulty always experienced of supplying organs of the largest class with an adequate supply of wind has in this instance been overcome by the employment of hydraulic engines; five of these most simple machines are attached to a like number of bellows placed in the basement of the building, and the wind-supply thus procured is thence distributed to the various departments of the instrument through the intervention of twenty-seven reservoirs, so weighted as to give the desired varieties of pressure. The united power of these hydraulic engines—equal to eight-horse power—is capable of supplying one hundred cubic feet of air per second.

The pneumatic action is applied to all the claviers, so that the touch, which would otherwise be very heavy on so large an organ, is extremely light.

The front of the organ was designed by Mr. Cuthbert Broderick, the architect of the Town-hall. The pipes are illuminated in gold and colours by Mr. Crace, who also carried out the decoration of the hall. The non-musical reader may be interested to learn that the largest of the metal pipes in front, standing on the first tower on the right of the claviers, is 36ft. in length, with an internal diameter of 21in.; while among its 6,500 pipes is found every variety of dimension, from the largest, just mentioned, to the smallest, the length of which is but three quarters of an inch, with a diameter scarcely exceeding that of a straw.

The organ occupies the north end of the hall; it is upwards of 50ft. high, about 47ft. in width, and 25ft. deep in the centre, and weighs nearly 70 tons.

The total cost, including the case and hydraulic engines, was about £6,000.

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Cambridge School of Art.—Lord Houghton on Tuesday week distributed the prizes to the pupils of this School. In the course of his address his lordship referred to the recent establishment of a Professorship of Fine Arts in connection with the University, and which, he said, was not established a day too soon. The nobility and gentry of the present day did not study and appreciate art like their ancestors of a century back, and he recommended the authorities of the University to try and foster an appreciation of art. Cambridge was singularly fortunate, he observed, in the grand incentive to the study of art which existed in the magnificent buildings of the several colleges.

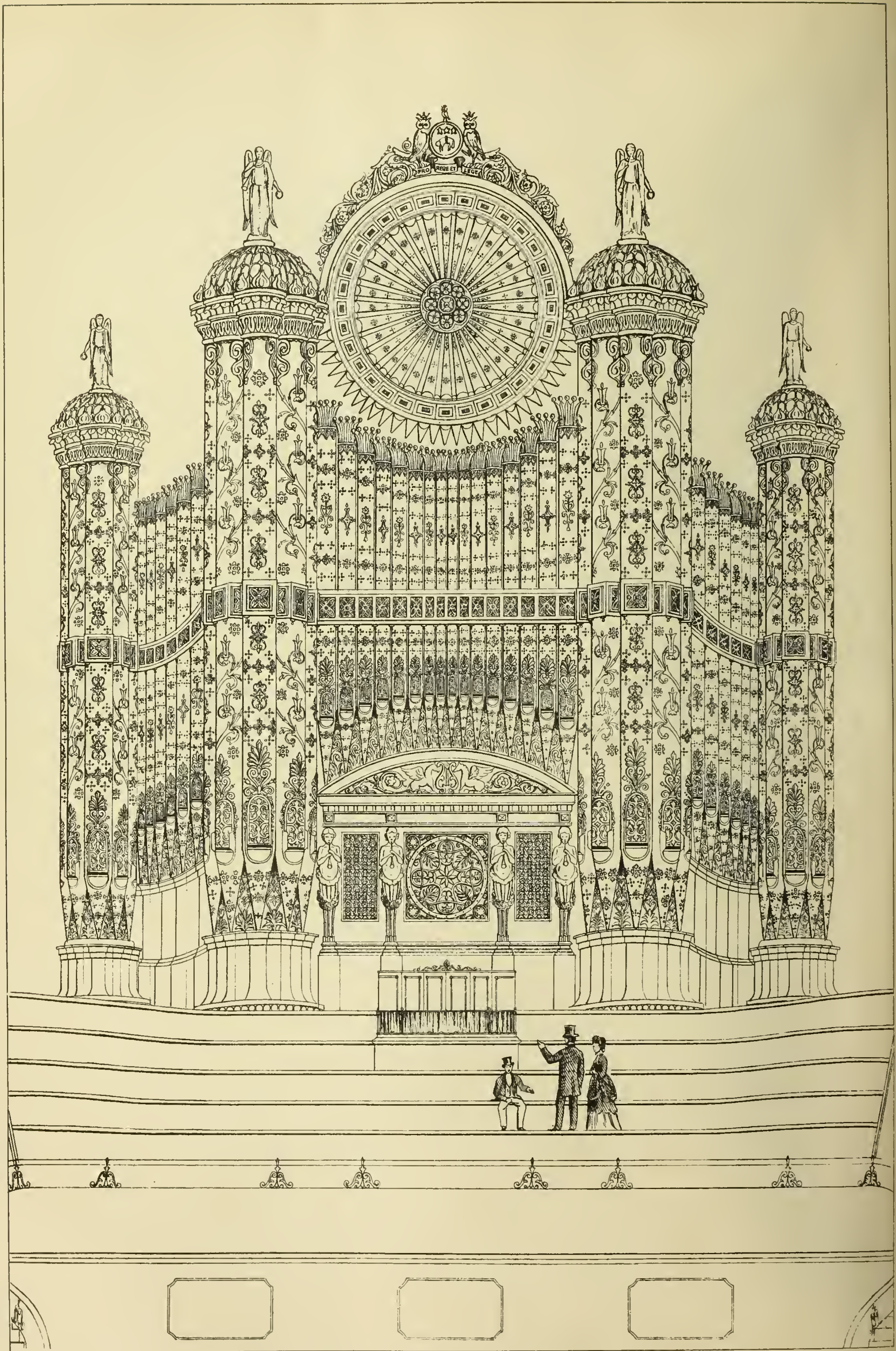
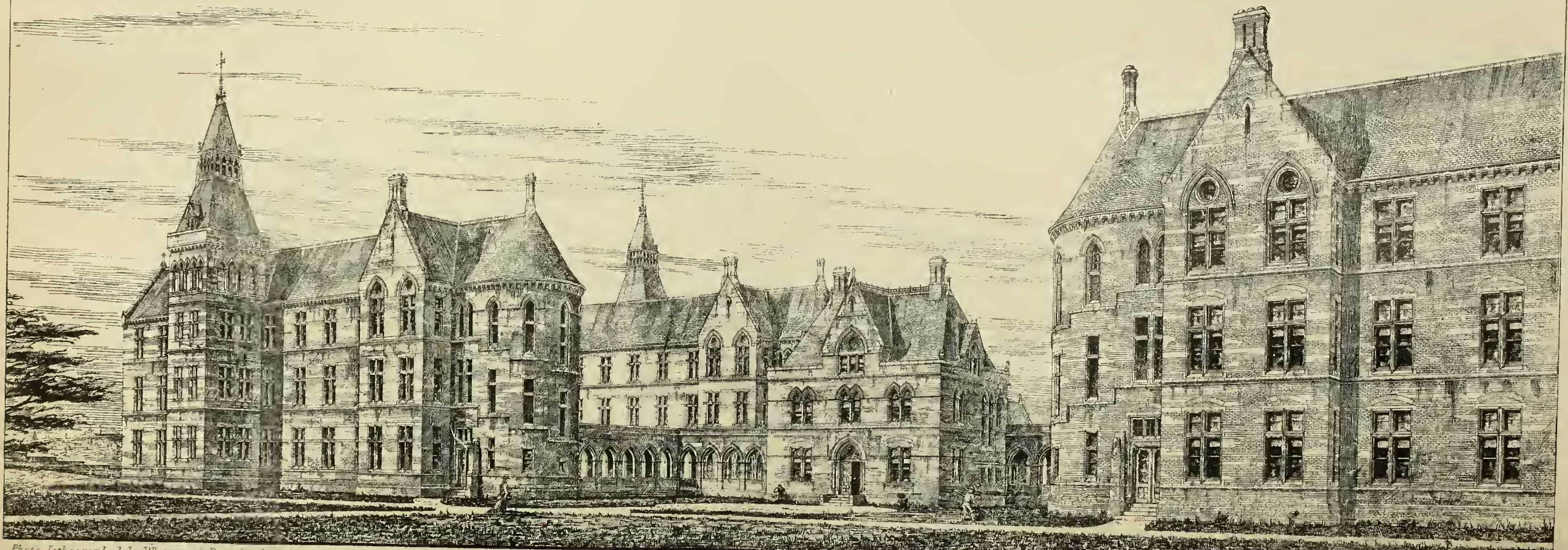


Photo-Lith graphed by Whiteman & Bass

THE GRAND ORGAN, TOWN HALL, LEEDS.

GRAY & DAVISON, BUILDERS.

SELECTED DESIGN. LEEDS UNION INFIRMARY. HENRY WALKER, ARCHT.



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Furniture & Decoration.

DECORATIVE PROCESSES.

By "AN EXPERIENCED WORKMAN."

EMBOSSED AND FIGURED GLASS.

EMBOSSED glass, as a means of decoration, has been practised for a great number of years, but it has only been within the last thirty or forty years that its usefulness as a decorative agent has been fully developed and recognised. The quiet and unobtrusive contrast between the dead or ground glass and the transparent ornament, which has apparently a slight relief, enables this kind of work to be used with all styles of architecture—Gothic, Italian, Greek—and in all and every situation where ornamental glass is used—vestibule doors, staircase windows, entrance doors to banks and public institutions of every kind. Letters and inscriptions may be written in combination with ornament to direct or instruct. It is also useful as a permanent blind to the lower parts of office windows in commercial or municipal buildings, and for screens. Beautiful effects may also be produced by gilding and silvering in combination with embossing, and by the introduction of coloured foils and imitation gems of coloured glass, cut with numerous facets: these are fastened underneath, or at the back of the glass, in spaces left purposely in the design. Messrs. Jennings and Bettinge, of Birmingham, have brought this portion of the art to great perfection, and many specimens of it were displayed by them at the Great International Exhibitions of 1851 and 1862, some of them being perfect gems of art. Opaque glass panels for the doors of cheffoniers, sideboards, wardrobes, the saloons of steam-vessels, bookcases, &c., may be beautifully decorated by being embossed and then gilt and coloured. The embossed ornament may be gilt, and the plain part ground or obscured in the manner hereinafter mentioned. This style has a very quiet and chaste effect, and the obscuring forms a beautiful background in contrast with the gold or silver. Finger-plates for doors are very nice done in this style. Many years ago, when plate glass was limited in size to small plates, and the old-fashioned chimney or pier glasses having broad bevelled edges to them were in vogue, embossed and cut ornament was much used for borders and corners, generally done in the Italian style, many of them of very beautiful design; they were afterwards silvered and gilt. Examples of these old mirrors may now and then be seen in some of our old country mansions and the old curiosity shops. Many useful lessons may be derived from the study of these old works of art. The use of embossed glass in the present day is very extensive. There is scarcely a warehouse, a manufacturing establishment, a shipping-office, or public building of any kind throughout our great towns and cities, in which embossed or ornamental glass in some shape is not used; and there is no style of glass ornamentation so well adapted for the purpose, inasmuch as we thus get ornamental and emblematical designs and inscriptions without interfering with the passage of light, which is, of course, the primary object and use of glass, and to which all else should be subordinate. There are, of course, many uses to which embossed glass is put besides those before named, such as public-house and gin-shop signs, glass facias for shop fronts, &c., &c. These, as a rule, are executed by the sign writer. Ornament for embossing will require, in the first place, to be designed in strict accordance with the style of the architecture of the building of which it forms a part. How often do we see the ornamental glass of a vestibule door in which the ornament will probably be in the Gothic style, whilst the door of which it forms a part is Italian or Greek, and *vice versa*. This does not always arise from want of skill in design or execution; but as much of this work is both designed and executed by artists and workmen regularly employed in the various stained glass works, who are most of their time engaged upon the stock Gothic canopy work for fitting into any and every stained window manufactured, as a consequence these men acquire a certain amount of Gothicism, if we may so speak, which they stamp upon every kind of ornament they do so that if they attempt to design an ornament in any other style they cannot help but impart a Gothic character to it; and it is a singular fact that men who, as it were, continually run in one groove, are seldom able to break away from the fetters they thus insensibly weave around themselves, and so we get those numerous incongruous examples of ornament of which so many may be seen not only in embossed glass, but also in other classes of ornamental art. Again, these mistakes in style and in adaptation of design to the purpose to which they are applied will and do arise from ignorance, narrowness of idea, and from inexperience. Ornament intended to be embossed upon glass should be designed expressly for that purpose, having always in consideration the peculiarities and capabilities of the material upon which the ornament has to be formed, having regard also to the methods of working. It should never be forgotten that the light has to pass through the ornament, and that this passage of light is the primary condition of the position and circumstances of the glass; it is so placed for the transmission of light, and therefore anything that interferes with that condition is a defect. The eye should be able to rest upon the ornamented glass without feeling oppressed or confused, and except this be the case no ornament can be appropriate or suited to the purpose. Small and intricate ornament cut up with fine lines has a disturbing effect on the eye, besides being unsuited to the material. It is true that finely-etched ornament may be correctly executed by this method, but when used for architectural decoration the design should be treated with breadth and freedom; the simpler the ornament the better suited it will be for the purpose. Conventional leaves with interlaced lines or strap ornament is well adapted for embossing, and it should always be borne in mind that flat ornament is best suited to the material from every point of view, best adapted for execution, most suitable for the transmission of light, and looks best when done. Cross hatching is used for shading on embossed ornament, but we think this an error, except it is used in dissecting coats of arms and emblematical designs; in these cases we can scarcely do without; but simple lines are best for cutting up and defining ornament, and the fewer there are of them the better. The manipulative process of embossing glass is carried out as follows:—Hydrofluoric acid has the peculiar property of dissolving or separating the component parts of ordinary glass; and this acid is the active agent used for embossing. It is needless here, and would serve no purpose, to describe the method of manufacturing this acid, simply because it is a common article of commerce, manufactured by practical chemists, and supplied by any druggist or oil and colourman, and therefore the student need not occupy his time in endeavouring to make what he can purchase at a tenth of the cost he would incur in making it for himself. By the way, we would remark that a great part of what would otherwise be really practical works are occupied with useless descriptions of the methods of making articles which can be bought much cheaper, and a great deal better, than any amateur can possibly make them, thus leading the student to waste valuable time which might be much better employed. All branches of the decorative art were at one time a much more laborious and difficult study than they now are: one reason being that the secrets of the manufacture of various chemical substances and mixtures used in the arts were the exclusive property of the masters of this or that particular trade or profession; and these secrets were handed down from master to pupil, and from father to son, as most valuable possessions, to be guarded and preserved with most jealous care and secrecy. This state of things is now changed to a very great extent. It is true that there are in some manufactures trade secrets which are still guarded with as much care as in the olden time; notably in the manufacture of varnishes, where each manufacturer has some special method or mixture he calls exclusively his own, and the knowledge of which he keeps to himself. But of late years so much study and scientific knowledge has been brought to bear, and so many master-minds have devoted their whole time and energies to the invention and discovery of the secrets of chemical science, that we may almost conclude that the days of trade secrets have passed away. Manufacturing chemists now supply all the necessary pigments, whether artificial or natural, and those of the best; chemicals of the best and purest kinds are produced in quantities and at prices with which no amateur can compete. We shall, therefore, confine ourselves strictly to the simple manipulative process of embossing.

Embossing on glass means simply the eating out, or cutting of a sunk or incised pattern into the body of the glass. This may be done by cutting with the glass-cutters wheel and sand and water, or by burning or eating the glass away, or rather dissolving the glass. Glass cutting or engraving by the wheel and sand is not applicable to large plates or squares of glass, on account of the difficulty of handling, and the danger of breaking; and the only other process yet discovered is this method of dissolving glass by the aid of hydrofluoric acid. This acid is, we believe, the only direct agent known having the properties of dissolving glass. It is a colourless liquid, produced by a chemical combination of sulphuric acid and fluor-spar; it requires very great care in handling. The fumes arising from it when exposed to the action of the atmosphere are highly deleterious, and as it destroys all bottles of glass and earthenware, it is necessary to keep it in metal or gutta-percha bottles. We would here specially caution the workmen to avoid breathing or inhaling the vapour which arises from the acid when it is put upon the glass in working with it, as its action is very injurious, causing ulceration of the lining of the thorax and the lining of the mouth and nostrils. Fluoric acid varies much in strength when purchased at various times, and from different makers; any respectable dealer in drugs will supply it at about 1s. 6d. per pound, but, of course, it may be had at a much cheaper rate from the wholesale houses. The acid is scarcely ever used in its full strength as sold, and before using will require to be diluted with water. We can give no rule of strength to be used, not only because the acid itself varies in strength when it comes from the chemist, but the glass also varies so much in hardness that one piece of glass will take twice or thrice the time to emboss that another plate will take. We cannot account for this difference in the glass, except it be in the difference in the annealing process; even in cutting the glass with the diamond this difference in hardness will be readily and continually felt or experienced; so that it is only by practical experience in the act of manipulating the acid that the workman can regulate its strength. Embossing may be done upon two kinds of glass: plain glass upon which the design may be embossed, and the plain parts ground or obscured with emery or fine sand in the manner hereinafter described—the design will then have the appearance of a bright and transparent ornament on a semi-opaque white ground; the next kind of glass suitable for embossing is the overlaid, or flashed glass, that is glass which is coated on one side with a thin veneer of coloured glass. This glass is principally made of what is called table glass—the oldest form in which window-glass was made. The glassblower first takes up on the end of the blow-pipe a portion of white glass in a liquid state, he then dips this into a pot containing coloured glass, also in a fluid state; the two are then blown and manipulated until they expand into a circular sheet of glass, having the blow-pipe for a centre, and the coloured glass, technically called pot-metal, forms a thin coating upon the outside of the sheet. The centre, which is attached to the blow-pipe, forms what is commonly called a bull's-eye, which were often used for glazing in cottage windows before the invention of sheet glass. Sheet glass may also be flashed or coated with coloured glass; but sheet glass is blown in a different manner to the table glass, but is not so clear in consequence of the flattening process it has to undergo in the annealing. The metal is taken up on the end of the blow-pipe in the same manner as before described, but in larger quantities. The glassblower stands upon a stage exactly similar to a saw pit, with planks running from the mouth of the kiln holding the melted glass. Underneath the planks is a pit 7ft. or 8ft. deep. The workman stands upon one of these planks, and holding the blow-pipe blows down the pipe and swings the metal at the same time. By alternate swinging and blowing the metal begins to stretch out into an elongated cylinder, the centrifugal force causes the glass to stretch, while the blowing forces it into a cylindrical form. Some of these cylinders are 5ft. long, with a diameter of 12in., 14in., and in some cases 16in. Glass shades are thus blown, but with this difference, that while the glass is in a soft state the cylinder is pressed between two pieces of wood, which flattens the sides, and gives these shades their semi-oval form. These cylinders are then cut level round, the bottoms and tops with a glazier's diamond fixed upon wheels; they are then cut down one side and laid in the annealing kiln, and when they acquire a sufficient heat are flattened by being rubbed with a thick clump of wood fastened to the end of a long pole. Now this flashed or coloured glass may be embossed by eating away the coating of coloured glass until we come upon the under coating of white glass, and the effect produced is of a white transparent ornament upon a coloured ground; or the two may be reversed, the ornament or letters remaining coloured and the ground-work be white. It will be evident that there is a wide field for the use of this kind of glass for bordering of staircase windows, vestibule doors, lamp-glasses, &c. A very harmonious and chaste contrast is gained by using this coloured glass in combination with the plain or white embossed glass, and also in conjunction with gold and silver leaf, of which we shall speak further on. In addition to the fluoric acid for embossing, we require to use the best Brunswick black, some Burgundy pitch and white wax. It is necessary to the perfect success of the operation that the Brunswick black should be of the best, and free from admixture with any foreign matter. Too much care cannot be exercised or pains taken to avoid any dust or particles of grit being mixed with it in working. The Burgundy pitch and white wax must be mixed together by heat, sufficient wax being added to the pitch to keep it in a plastic state, and of the consistency of putty, used while warm. This is called walling wax; of its use we shall speak hereafter. Black japan is sometimes used instead of Brunswick black, but we prefer the latter, inasmuch as it resists the acid much better, and is more easily cleaned off the glass when done with, and is also less brittle when dry than the black japan.

(*To be continued.*)

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Byfield church, Ongar, has just received an addition in the shape of an eight-day turret clock by Benson.

SELECTED DESIGN, LEEDS UNION INFIRMARY.

We gave last week an elevation of this design, and now present a perspective view of the building. Mr. Walker, from his description of the design, appears to have paid special attention to the important question of ventilation and heating, which he purposes to effect by the hot air system. He would carry a single line of steam piping round each ward, and box it in with wood, in order to form an air-flue about the pipes. To this flue, air would be conveyed from a common supply trunk, under the floor of the lowest ward, by means of intermediate flues in the walls; and admission of the air to the wards, after passing over and for some little distance along the steam piping, would be provided for by openings in the wood-work at regular intervals. No air could thus enter the ward without having received some degree of heat from contact with the hot pipes, and the temperature of the room would depend on the degree of heat applied to the pipes, and on the speed with which air is allowed to pass over them. As the air is admitted to the ward, the warmth it has gained from the pipes will cause it to ascend, and carry up with it all atmosphere exhaled by patients, until it reaches the ceiling, near to which a number of outlets are provided, all communicating by separate flues with a common trunk in the roof, which discharges the whole spent atmosphere of each pavilion into the ventilator placed over the conveniences.

The supply and discharge-pipes would be of such dimensions as will admit of the air being renewed imperceptibly, each ward being furnished with a supply of 12,007 cubic inches of air per minute for each patient, travelling at a velocity of one foot per second, being about thirty times the amount actually respired. The heat of the hot pipes will ordinarily cause a sufficient air-current to ventilate completely the wards; and, whenever additional ventilation is needed, it will only be necessary to expedite the current by the use of a small fan fixed at the mouth of the supply trunk, which can be worked either by the steam from the boiler used to supply the pipes, or by water pressure obtained from the cold water tank. The steam supply for heating would also serve, if necessary, for working the hoist.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. Zerffi delivered the nineteenth lecture of this course on Tuesday afternoon last, at South Kensington. Having considered the productions of the school of Ægina in his previous lecture, he now turned to those of the school of Attica. Referring to the statue of Penelope, now in the Vatican at Rome, he said that in that figure were seen the first attempts of Attic art to represent a psychological idea. The Hestia (Vesta) in the Torlonia Museum at Rome, and an excellent marble relief from a Puteal near Corinth, in which Herakles was represented as about to be married to Hebe, were works of the same kind. The latter was, the lecturer remarked, undoubtedly one of the very best specimens of the end of the first period. He next proceeded to consider the artists of the transition stage, which eventually led up to Phidias and his school. The three names Kalamis, Pythagoras, and Myron represented a steady and gradual improvement in Greek art. Relief had been cultivated, and not only single statues, but whole groups had been detached from the supporting walls and had formed independent works of art. The heroes, unlike many of the divinities, had not been delineated according to general patterns. A keen study of the human form could alone have produced them, and the grouping showed the powerful influence of the creative force of the artist. We might trace during this period the struggle of the artists to free themselves from fixed rules. We had before us different types of the divinities; but these, though bearing evidences of the artist's individual conception, were still fettered by hierarchical prejudices. The attributes of the gods were too prominent—the thunderbolt of Zeus, the caduceus or herald's staff of Hermes, the bow of Apollo, and the club of Hercules appeared to have been considered more important than the idea of the abstract powers of those divinities. These attributes were not yet the incarnations of sublime thoughts on the nature of the gods, but merely outward signs of their material power. With regard to the works of the three artists before named, Dr. Zerffi observed that a copy of a Hermes bearing a ram on his shoulders, the original of which was by Kalamis, was in the possession of Lord Pembroke. In this work the head of the ram was admirably executed, but the outlines of the body, which had a stiff naturalness, were too sharp. This artist was especially distinguished for his representations of horses. Pythagoras was celebrated as having been the first to introduce harmony in the proportions of the body; this was particularly to be observed in a statue of Philoktet, which represented the archer of that name, who, having been bitten in the heel by a serpent, was still endeavouring to drag himself along in order to be at his post and assist in the Siege of Troy. This painful moment had been seized by the artist and rendered with such power that the beholder might almost be said to feel a thrill of pain pass through his own body. Of the works of Myron, we had the Marsyas, at the Lateran, and the Diskobolus, or disk-thrower. In describing the latter, the lecturer compared it with a modern statue by Roth, of Münich, and observed that in looking at the two, side by side, the great difference between idealism and so-called naturalism was clearly to be perceived. In the one, the moment before action was represented (the figure being about to throw the disk); in the other the action had already taken place, and the figure was in repose, holding a heavy weight suspended over its head. The latter was without doubt a masterpiece as an anatomical study—every sinew, every muscle, being correctly represented—but as a work of art it failed, being in no way really beautiful. In the production of Myron, on the other hand, the muscles were softened down and rounded, and the power of the artist was directed to beautifying by means of his intellectual force those forms which might be coarse in Nature. The lecturer also refered to the famous bronze cow by this artist, of which he remarked that all traces had been lost, though from what could be gathered from the works of different authors it must have been exceedingly lifelike. In this second period of the development of Greek art, therefore, Kalamis had been the representative of a clear and definite feeling; Pythagoras represented naturalness in the reproduction of forms which reached perfection; while Myron was the representative of the first dawn of idealisation. Myron's idealisation had, however, been confined to bodily forces, as the faces of his statues lacked a higher inspiration. The acme of Greek sculpture was reached by his contemporary, Phidias, who might justly be called the Shakespeare of his time. Phidias in Greece, like Shakespeare in England, lived at a period when his country was enjoying the brightest and most glorious moment of her national existence. He begun to work at the time when youthful Greece had performed her great deeds of valour—when she had checked the encroachments of the Asiatic barbarians, and had secured on the battle-field of Marathon, and at Salamis and Platæa, the victory of Beauty, Science, and Art. In the days of Shakespeare a Queen Elizabeth ruled in England; and Greece in the time of Phidias was swayed by men like Kimon, Thermistokles, and Pericles. Phidias, in accordance with the Greek element, had produced outward forms in perfection, and endowed them with his immortal spirit; Shakespeare, in accordance with Christian ideas, had given us immortal characters, conceived in spirit and expressed in abstract signs, which stepped from the printed leaves and stood firm as the marble conceptions of Phidias before us. The small Greece of Pericles, like the small England of Shakespeare, had begun to develope with surprising rapidity—the one cultivating architecture, sculpture, and science, and the other poetry, industry, and commerce. By the one the Persians had been repulsed, their despotism broken; by the other the Invincible Armada had been scattered, and the spiritual despotism of the Middle Ages destroyed. Greece had produced a whole phalanx of noble warriors; England had reared a whole race of sea-heroes. Both had proved that periods of renewed political activity and animated national feeling produced great men in countries in which there was a genuine vitality. The vitality of Greece produced Pericles in politics, and Phidias in sculpture and architecture. Athens was to have been made the abode of the gods, the temple of the Muses, and the centre of learning and art. Phidias (who was born about 500 B.C.), was the son of Charmides, of Athens, and was the pupil of Hegias and Ageladas. His two most celebrated works were the Zeus at Olympia (432 B.C.), and the Athene of the Parthenon (437 B.C.). The Athene which he produced was 40ft. high, composed of gold and ivory laid over a wooden form. Simplicity, peaceful power, benevolent protection, and victorious self-reliance were expressed in this work. It was a characteristic fact that in Greece there were many mythical heroes, but very few deifications of mere historical soldiers. There were statues without number of those who distinguished themselves in poetry or art, or who had gained prizes as wrestlers or runners, but mere destruction was not so respected. Phidias especially succeeded in giving a concrete form to the abstract conception of the, divinity as far as was possible. His works were very numerous; in addition to the statues of Athene and Zeus mentioned, there were thirteen others, of which six were of Athene (one of them being in bronze and 70ft. high), one of Apollo, one of Hermes (marble), three Aphrodites (two marble and one gold and ivory), one Mother of the Gods (material unknown), and an Æsculapius in gold and ivory. Of sacrificial statues, the most celebrated was a group of thirteen figures in bronze, in commemoration of the Battle of Marathon. The only historical figure in this group was that of Miltiades, the twelve others surrounding him having been mythical heroes. Phidias was no less skilled in chiselled works of the smallest kind. According to Martial, he made fishes, bees, flies, and a cicada. Of all these, however, none remained. His Zeus was struck by lightning in the time of Cæsar; and during the reign of Theodosius II. (A.D. 408), the Temple of Olympia was destroyed by fire, and with it the great masterpiece perished. The Athene was lost, it was said, in the tenth century of our era, but had, no doubt, been destroyed before that date. All that remained of Phidias's works were some of his architectural sculptures, which, at least, served to prove the great master's genius. Amongst these were—The metopes of the Temple of Theseus, eighteen in number, ten of which, from the eastern side, represented the deeds of Herakles, and eight, from the north and south, those of Theseus himself. Of the frieze (representing an heroic combat under the guidance of the gods), there were splendid casts in the British Museum. The metopes, the frieze of the cella, the statues from the pediment of the Parthenon, and other works by this great master having been described in detail, Dr. Zerffi concluded by observing that neither Phidias, nor the school he founded, was sensational, but did justice to poetry in exquisite forms, finished with great care and technical knowledge. Alkemenes and Phidias had had to produce colossal figures of Athene; and that of Alkemenes whilst still on the ground obtained the prize, that of Phidias appearing out of proportion and coarse. When, however, the statues came to be raised on their lofty pedestals the critics had to revoke their judgment—that of Phidias appearing perfect, whilst that of Alkemenes had lost all its refined and detailed charms. From this it was evident that perspective had been studied with the greatest attention by Phidias, and it was much to be regretted that the same could not be said of more modern sculptors. The great merit of Phidias, however, was idealisation; with him the study of anatomy was not degraded to a coarse naturalism, but had served as a mere basis—as a framework or mould into which he had poured his sublime conceptions of the forms of mankind, so as to reproduce their spiritual essence in matter. In this direction he was followed and almost rivalled by Polycletus of Argos.

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A NEW ROAD MATERIAL.

ASPHALTE, granite, and macadam have all been temporarily superseded as road materials in Kennington lately by churchyard mould and bones. A new roadway is being made, and last week one of the sanitary inspectors who visited the spot found that several loads of earth, intermingled with skulls, bones, and portions of coffins had been brought to the place for the purpose of making up the ground. A number of boys assembled and awaited the arrival of the carts, and upon the load being deposited they set to work collecting the human remains, which they afterwards sold. Some thirty to forty cartloads appear to have been brought from an old burial ground which is being disturbed for the purpose of making additions to the National Gallery, which it adjoins. The Secretary of State had *directed* the remains to be collected and re-interred; but it was far less trouble to all concerned to let things take their course, and allow the bones to be carted off to be used as road materials, or to find their way to the rag-shop through the agency of the thrifty, but rather unscrupulous, juvenile population of Kennington. The burying-ground referred to appears to have been used as a plague-pit. This fact is especially worth remembering by the inhabitants of S. Martin's-in-the-fields and Kempsford-road. Seriously, ought the contractor, whose carelessness, or the carelessness of whose men, is responsible for this dangerous outrage on good-feeling, to escape with a gentle magisterial reprimand?

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GUILDS FOR ART AND ARTISANS.*

WE thoroughly agree with the author of this pamphlet, that "there is no greater sign of the dismembership of society than the unsystematised and spasmodic efforts that are now made to revive art." There are very few who deny the decay of artistic feeling—almost as few who can agree as to the method of its regeneration, or who really have made up their minds what it is they wish to regenerate. Mr. Fry has one strong claim on our attention. He is at least practical and talks common sense. His propositions are simple and his conclusions have a business air about them. He lays down the axiom that, to reproduce the art work of Mediæval times, we must first reproduce the system which gave it birth. First of all he recognises the existence of a healthier and more vigorous tone about the demand and supply of the Middle Ages. The customer knew what he wanted and went for it to a practical workman, and betwixt them no "middle man" intervened. The "master mason" took the idea of the work from the employer, and, occupying the places now held by the architect, the builder, and the clerk of works, devoted his undivided attention to the work during its progress, and personally superintended all engaged in it. As a practical way of effecting such a change on the present system, Mr. Fry suggests that architects should leave their offices, corporate good artisans with whom they are personally acquainted into guilds, and execute their own designs themselves *one at a time*. What sort of a reply, we wonder, would be made to this by Mr. Scott, who turns out his churches by the score, like a manufacturer of chairs and tables, and with about as much personal superintendence?

The "corporate guilds" would consist, according to Mr. Fry, of members all personally known to each other. Strikes and lockouts would be avoided, because the connection between masters and men would cease to be wholly of a mercenary character, as it is at present. They would no longer be merely machines, but each possessing the privilege of a voice in the work, subject only to the control of his chief, they would soon cultivate an *esprit de corps*, which would prove a potent power for good in improving the work done.

From the establishment of such guilds Mr. Fry candidly admits he expects no immediate great improvement. "But the right track would have been found which has been known to lead to the true goal, and, by steadily pursuing it, in course of time one might hope to arrive at the same termination—to a style of architecture as pure, as genuine, and as essentially modern, adapted to the climate and the age, as the grand old styles of bygone days were in their own time."

We reproduce the "Guild Rules," which are appended to Mr. Fry's essay. They give a complete notion of his idea, and we should be glad to see them criticised by our readers. The subject would form no bad subject for discussion by the members of the Architectural Association.

GUILD RULES.

The Guild to be directed by one master.

The Guild to consist of one master, fellow-craftsmen of all trades employed in building, and apprentices; not exceeding the number of fifty in all.

Each craft to be under the guidance of a foreman.

The foremen to be appointed by the master.

Each craftsman to be engaged by the master to work a time, not exceeding three months, as a probationer, before being admitted into the Guild, during which time he shall receive wages according to the market rate.

The master to have complete control over the men and the works; his decision in all cases to be final; and his designs in no case to be deviated from without his consent.

The master to have the power to bind apprentices as members of the Guild.

The men to receive weekly wages at the market rate; the particular amount in any case of dispute to be settled by the master.

The capital of the Guild to be held in shares of £1 by working members of the Guild only.

Each member to be a shareholder.

The lowest and highest limit of number of shares to be held by any one member of the Guild to be

The interest of the shares not to exceed the rate of 6 per cent. per annum.

The profits of the Guild, beyond this, to be usually divided into four parts; one of which to be devoted to the shareholders as bonus, and the three remaining parts to all members of the Guild in proportion to their wages.

The dividend, bonus, and profits to be paid half-yearly.

The master to have full power to retain such portion of the profits as he may deem necessary for current expenses.

The master to receive per week a crown a head for each member of the Guild until it numbers over twenty members, exclusive of himself. Then, when it exceeds that number, he will only receive half-a-crown a week additional for each additional member.

The master should be able to draw and carve well; he should have studied the human figure, and have a general knowledge of anatomy. He should also be a thoroughly practical man, able, in case of emergency, to put his own hand to the work. His duty would chiefly consist in making all necessary working drawings, keeping the men employed, and generally managing the Guild; but he should also find time for stone carving. The workmen would have a claim upon him to instruct them in their work when they require it.

The master should be the largest shareholder, but otherwise in money matters be subject to the same rules as the other members of the Guild.

No shareholder under £100 to draw his shares with lees than six months' notice, and those of £100 and upwards with less than a year's notice.

In the case of his suddenly retiring from the Guild, or dying, he or his heirs would be entitled to the interest on his shares, but to no part of the profits; also the same rule to apply in the case of any member being expelled.

The master to have full power to expel from the Guild any member who has been guilty of repeated misdemeanours or insubordination.

In the case of a criminal offence, a repetition would not be needed to empower the master to expel.

In the case of any difference of opinion arising respecting the highest limit of shares to be held by each member, it shall be decided that the right of each is in proportion to the weekly wages received.

The master to be quite irresponsible for any work in which he may engage the Guild.

The master shall settle any dispute between members that may arise.

The workmen to be represented by a committee of assessors.

Each craft to elect a representative to be a member of the committee of assessors, provided the craft numbers three or more members.

The assessors to be elected half yearly, and to be eligible for re-election.

The election to take place immediately before the payment of interest and bonus.

Every half year the assessors to appoint a chartered accountant (previous to the distribution of the bonus and the dividends) to audit the accounts.

This actuary's fee to be paid out of the funds of the Guild.

Any alteration of or addition to the rules of the Guild to be settled by the master, committee of assessors, and foremen—who shall together constitute the Board.

The Board shall arrange the holidays at Easter and Christmas.

The Board shall settle about the purchase of material and the price of work in contracting or otherwise. Any such decision to be subject to the master's veto.

The Board, for whom the master may act, shall legally represented the Guild.

The special object of this Guild is the erection of Churches, so it is thought proper that all its members should be in communion with the Anglican section of the Catholic Church.

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SCIENCE IN ARCHITECTURE.*

(*Continued from p.* 32, Vol. XIX.)

SLATING.

THE Port Madoc slates are not all of inferior quality, as has often been inferred by the building community in Liverpool on account of their experience with the cheap slates from that port that have lately been introduced and used largely among us. When in Carnarvon, a short time ago, I saw some tons of good Port Madoc slates that would compare well with the best Bangor. The inferior slates may always be readily told by their dull, heavy colour and heavy sound; some of these inferior Port Madoc slates I have known to become literally washed away by heavy rains. The clear ring and bright appearance of good slates are always a protection to the architect against his being deceived; as a rule, the clearer the ring the better the slate. Slates are of best quality when taken from deep down in the quarry, the weight upon them causes closer texture. It is worth noticing that this rule does not hold in the quarrying of stone. Bath stone is, as a rule, found coarser very deep in the quarry than at a moderate depth.

In Liverpool, where roofs are generally flat, ton slates have the preference. The liability of chimney pots falling upon them, and the persistent walking upon roofs by tradesmen, however much they are cautioned to the contrary, make it advisable to use the strongest slates possible; Count slates look better and are more suitable for sharp roofs. In laying slates it is well to leave a small space between each, instead of fitting them quite close together; the space acts as a channel to convey the water to the slate below, but if fitted closely the water spreads and runs along the ridges of each slate, finding its way into the nail holes, and occasioning damp in the ceilings underneath; the numerous ridges in ton slates make this precaution especially necessary. There is great necessity for watching, not only the proper lapping of the slates, but also the cover of the nail holes by at least four inches; roofs are frequently defective for want of precaution in this particular. More lap is requisite with ordinary ton slates than with Count, since being rougher, they do not lie so closely; the neglect of attention to this is often a cause of damp.

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* "Guilds Desirable for Art and Artisans," by SAMUEL FRY. London: J. Masters.

* Read by WM. PARSLOW, Esq., before the Liverpool Architectural and Archæological Society.

CEMENTING.

Good cement face-work will stand well for many years without being painted. Cement that requires painting for durability and not for appearance only is of inferior quality; the principal object in painting cement work is to give it a fresh appearance. The front of the old Compton House, in Church-street, which had all the appearance of stone, was good cement that had not been painted. Good Portland cement may be always told by its bright colour of bluish tinge; the common is a dull slate colour. For face work two of gravel and one of cement is the best mixture, with the finishing coat half and half; too much cement in the mixture, making it technically too rich, is a common cause of cracks. Good cement the second day should be so hard that it cannot be broken without difficulty; that which will crumble easily in the fingers on the second day may be condemned at once as not good. Specifications often require that gravel only shall be mixed with the cement; that for mouldings should, however, be mixed with sharp sand, otherwise a smooth finish cannot be obtained. Portland cement should not be wetted on finishing; this perishes the cement; the first coat should be well wetted and soaked, then the last coat put on, and this not touched again with water; if rain gets to it before being quite dry it is very liable to perish; on the other hand, fire cracks, common in cement works, often arise through the under coat being too dry when the last is put on. If cement be put upon a wall liable to damp, the wall should be allowed to dry first, otherwise the cement may perish. If this precaution is not taken, and the damp in the wall does not dry out quickly or becomes renewed, the cement is sure to perish. The cracks that occur in the lining of rain-water tanks are not generally due to inferior cement, but to insufficient provision for bearing the weight of water. In making a rain water tank of brickwork it is well to build the half brick lining in cement, and then form the bottom of the sides of the tank with cant angle bricks; this takes a great deal of the pressure of the water off the bottom and throws it on to the sides, preventing leakages through cracks occasioned by settlement. The cant bricks may be put in after the tank is formed set in cement, but they are better built in as the work proceeds and bonded. For pointing about roofs hair mortar mixed with cement is better than cement only; it adheres when the heat and cold cause expansion and contraction, and does not crack through uneven drying; half and half is a right proportion. Good cement is often spoilt at buildings through undue exposure or otherwise by want of care; when the men are disposed to put this into their work, it becomes difficult for the architect to detect the evil until too late. It is necessary to be very strict with men on the first evidences of indifference.

PLASTERING.

In lathing for plasterwork laths should break bond—an arrangement technically termed snatching; this gives a good hold to the joists and makes a firm ceiling. Instead of the lathing being executed with rows of laths of equal lengths, joined by other rows of similar lengths, the bond should be broken by changing the length of the laths every five or six feet, and so causing one set to stretch across the joists to which the others have been fastened. This system takes more time than the ordinary system, and will not be adopted by men unless they are well looked after; it requires to be distinctly, specified, on account of the extra labour. It is well to examine the cow hair provided for mortar before it is used; hair ought to be long and sound, but often it is brought to the building in bags, of short length and quite rotten, no strength in it. This sort of hair makes the plaster far worse than it would be without any; the plaster should also be examined before being put upon the ceilings by holding a little up with the spade; the quality in this respect can be detected by the hair hanging dawn. About six pounds of hair to one of mortar is a good proportion for top stuff; considerably less hair is needed in wall stuff. The finishing coat of plaster is sometimes set with hair in it; the plasterer picks out the white hair and beats it fine, then uses it with plaster of Paris. The last coat should be composed of about one-third plaster to two-thirds of lime-putty. The blotches or streaks sometimes seen in plaster walling are generally the result of bad work, though not so in all instances; a sooty or burnt brick in a wall will sometimes cause an unsightly patch on the plaster; marks from this cause have been known to come not only through the plaster, but the papering also. New ceilings ought not to be whitened: whiting eats into the new work and injures it. Lime for mortar should be burnt but little; much burning destroys its nature; the phrase "lime to be well burnt" is apt to mislead. When sluiced, lime is much better than when slaked in the common way; by sluicing I mean letting it fall to pieces, instead of running it with water; it becomes much more durable for mortar, and especially for pebble-dashing in mortar. If in mixing the lime for mortar or plaster the least bit remains whole, though as small as a pin head, it will burst in time and throw the plaster off the wall. This explains the cause of bursting occasionally seen on plastered walls. When the lime is run with water this defect is not so frequent as when the lime is allowed to fall; the latter mode, however, makes a superior mortar, but the lime for this purpose is best prepared two or three months beforehand, which precaution prevents any portion of the lime remaining whole; it involves extra trouble in turning it over, which makes the mortar very expensive. I have known the following practice to be observed in making good mortar:—The lime spread on the ground and a little water thrown over it, the whole then covered with sand and left for three or four days. The water slakes the lime into a powder; this is then mixed with the sand, and the whole passed through a sieve; it is then ready to mix with water to form mortar or plaster.

The best way of forming plaster cornices is to run a muffled mould, muffled with plaster of Paris, upon a ground of hair mortar, and leaving about ⅓in. to be run afterwards with plaster of Paris and lime putty; this makes a much stronger cornice than is made by the present system, which is only a result of a wish to expedite the work and make it cheap at the expense of quality of workmanship. Plaster cornices often crack through there being common plaster mixed with the good; the common sets more quickly than the good, and the uneven setting produces cracks. It is a common practice to mix glue with plaster when there is doubt as to its quality; the glue causes the whole to take a longer time in setting.

PLUMBING.

No branch of the building trade requires more careful supervision in the execution of the work than this; defects creep in from all conceivable causes. I was recently asked to look at the iron cistern attached to a circulating boiler that had only been in use three years, but was now worn out; the house was of good class, £150 rental. I found, on examination, that the bottom was completely worn through, and accounted for it thus: no steam pipes had been fixed, and hence the pressure of the steam had exercised a force upon the bottom and sides of the cistern, resulting in the effects named, mild compared with what they might have been, for though the necessary steam pipes had been omitted, stop cocks to the pipes had been carefully fixed; evidently the steam had found its only escape through these pipes, and hence, had the stop cocks happened to have been turned at any time, there would then have been no possible escape for the steam, and an explosion must have resulted. The work had to all appearance been committed to the care of apprentices who did not understand it, and this is one source by which errors creep into this important branch of the building trade. On another occasion, on being asked to look at some property in course of erection, I found the lead pipes were all of considerably less weight than specified, and having them, as I thought, all changed, I discovered a length of the old piping left in a place where not exposed, the new being jointed to the old in such a position as almost to escape detection; there was an abundance of lead piping supplied for the purpose by the contractor, and the only conceivable cause for this deception was the disinclination of the man employed to put himself to the necessary trouble involved; and here again another source may be observed by which errors creep in. As another illustration, I recollect, on the completion of a first-class villa, part of the flashings proved to be of three pounds lead only; this, on being discovered, excited suspicion as to the whole of the lead work; on examination, however, the remainder proved correct, and the contractor, who was an honourable man, accounted for the circumstance by supposing the man whom he had employed when engaged with that portion of the work found himself short of material, and used what was nearest to hand. Such circumstances show special necessity for careful and intelligent supervision of this branch of works, since, apart from malevolence, carelessness and accident may result in so much defective work that, though not at once apparent, is in the end the more injurious. Where there is a disposition to deceive, the facilities in plumbers' work are so numerous that the results are often infamous. In a recent erection in this locality, the sole contractor for which was a most honourable man, the roof, on completion, proved to be flashed with zinc, painted to resemble lead, lead, as per specification, being so fixed so as to deceive in those positions likely be examined. The eye may soon become familiarised with the various thicknesses of of lead sheets and pipes, and it is advisable to make an effort to retain this familiarity. In some parts of the north of Scotland I found, on a recent visit, that ordinary flashing is executed with 7lb. lead; this is an unusual strength with us, but should be adopted everywhere when the flashings are long or exposed to unusual tempest. Ways and means are continually evidencing themselves for saving expense in the manufacture of the numerous fittings required in plumbers' work, and a strong check is required on the part of the architect; while, on the other hand, it is no less important that he make himself familiar with the numerous improvements that are continually being invented. To enlarge upon this latter subject would be ou of place in this paper. Common brass work i taps, &c., is often deteriorated by a mixture o zinc in the metal; this may be known by th light yellow colour of the brass when polished the best brass work, containing gun metal, has much darker colour. Lead piping is often ob tained cheap in Liverpool made of old pipes, fro which the solder has not been extracted in th ordinary way, and which, being left in the lead necessarily destroys its properties. The regu lating cisterns of some houses I recently ex amined leaked in most instances, though they were comparatively new. I found the cause wa in the valve being flush instead of being raised, difference which considerably reduces the cos of cisterns, but detracts materially from thei usefulness; the action of the plug and chain assisted by corrosion, soon wears down the meta round the valve, causing it to leak; but when th valve is raised as it should be, the thickness o the valve has to be worn down, which is hardl possible, before this tendency to leak can begin A little difference such as this makes all th difference between good and bad plumbing, an again in reference to fixing those fittings, th cheap ways of joining pipes may be soon detecte but we cannot readily observe when taps an cocks are secured with a mixture of packing an solder instead of being neatly soldered only which is essential for such fittings. Boss tap are best having a square knob attached to th boss to secure their hold in the wood or ston work, otherwise when the tap is screwed or un screwed the pipe will be twisted and so injured Since the subject of using lead pipes lined wit block tin has been before us recently I will not as I intended, go into its merits, particularly a the chemical properties of the Liverpool wate have not the action upon lead that is experience elsewhere, rendering such pipes necessary with u but in reference to the subject I heard of a case lead palsy, where the doctors were at fir puzzled to find out how the lead had entered th patient's system; they subsequently found, how ever, that he had been accustomed to drink wat taken from a lead pipe which for a considerab distance had been exposed to the outer air, a this circumstance was regarded by the medic men as the cause of the disease, inasmuch chemical action sets in through the influence of water on lead pipes, much more seriously when aided by the external air than when the pipes are covered in the usual way; the circumstances suggests the necessity of caution in covering lead pipes. Lead pipes are liable to be injured by vermin. I have known rats to gnaw holes in gas and water pipes, and make serious havoc in a single night. Covering pipes with gas tar is a good preservative, since rats will not touch this.

(*To be continued.*)

PARLIAMENTARY NOTES.

The New Post Office.—Mr. Eykyn, on Thursday week, asked the First Commissioner of Works whether the description of the new Post Office, published by a member of the Council of the Institute of Architects was correct, and if so, whether any steps would be taken to improve the elevation of that building. Mr. Ayrton said, to make his answer intelligible, it was necessary he should explain the matter. The gentleman referred to had described the design for the new Post Office as the ugliest ever conceived—that it was entirely devoid of all architectural knowledge and treatment, and want of skill applied to the work in consequence of the arrangement the First Commissioners of Works had made for carrying it out. The best answer he could give was to state what really had occurred. The design for the new Post Office was originally prepared by Mr. Fergusson, an officer of the Department of Works, under the direction of the noble lord the member for North Leicestershire, when that noble lord held office. Mr. Layard, when he took the office, did not approve of the design, and he, in conjunction with Mr. Fergusson, prepared what they considered to be an improved design. It was then sent to the Postmaster-General, and to the Treasury, and on their approving of it steps were taken to obtain tenders to carry out the works before he (Mr. Ayrton) became First Commissioner; and to show the value of the ridiculous criticism referred to, he would only add that the Council of the Institute of Architects had recommended Mr. Fergusson to receive her Majesty's Gold Medal for the great knowledge which every one knew that gentleman possessed in all matters connected with architecture.

Building Intelligence.

CHURCHES AND CHAPELS.

Church Enlargement and Extension.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its usual monthly meeting on Monday, at the society's house, 7, Whitehall, S.W. Grants of money were made in aid of the following objects, viz.:—Building a new church at Caldmore, in the parish of Walsall; rebuilding the churches at Church Lawford, near Rugby; Linkenholt, near Hungerford; and Martindale, near Penrith. Enlarging or otherwise increasing the accommodation in the churches at Bebington, near Birkenhead; Britford, near Salisbury; Bywell S. Andrews, near Newcastle; Crawley Down, near Worth, Sussex; Germansweek, near Launceston, Devon; S. Mary-le-Strand, London; and Thorp Arch, near Tadcaster, York. Under urgent circumstances the grant formerly made towards rebuilding the church at Burton-Pedwardine, near Sleaford, Lincoln, was increased. A grant was also made from the School-Church and Mission House Fund towards enlarging the school-church at Sewer's-end, in the parish of Saffron Walden, Essex. The society likewise accepted the trust of a sum of money as a repair-fund for the church at Cantley, in the parish of Sedberg, York.

BUILDINGS.

Liverpool.—The London and North-Western Railway Company have erected at their terminus in Lime-street Liverpool, opposite S. George's Hall, a large hotel, which will be opened on the 1st of March. The building, which has eight stories, has been two years in erection, the architect being Mr. Waterhouse, of London, and the builders Messrs. Haigh & Co., of Liverpool. The hotel is built of white stone. Each corridor is 300ft. long. The hotel has stone flooring throughout, and is not only fire-proof, but each corridor is furnished with accessible hose and an ample supply of water.

Tenbury.—A hospital for the cure of infectious diseases has just been completed in connection with the Tenbury Union. The building consists of two stories, divided by a stringcourse of white bricks dentilled; a central gable with barge-boards and wrought-iron finial; a steep-pitched roof, tiled, with ornamental chimneys. The principal entrance in the front of the building has two arched doorways, leading respectively to the male and female wards. Exterior walls are 14in. thick, interior, ditto, 9in., the material used throughout being brick, relieved with bands of blue and white, with Bath stone dressings to doors and windows. On the ground floor are day-rooms for males and females, each room being 20ft. by 16ft., by 11ft. high. The male and female wards are on the first floor. Each ward contains four beds, is 11ft. 6in. high, and has the necessary accessories in the shape of closets, &c. The surgery is also situated on the first floor. The baths are movable on wheels. Mr. G. Page, of Tenbury, is the builder, and Mr. Ernest A. Day, of Worcester, is the architect. The cost has been about £1,200.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. M., A. R. & Co., Banks & Co., J. H. B., J. Hartley, C. Cosses, W. M. & Co., P. A., Hyde Clarke, C. J. J., J. K., J. R. White, J. G. B., R. G., R. & S., J. H. W., C. L. E., C. & Co., W. H. F., G. C., H. F., C. & Co., J. S. G., H. Son., P. & Co., P. & N. W., J. H., R. M. B.

Sketch Book.—Thos. Garratt, Patrick Auld, J. Langham, Charles A. Jacques, Ed. H. Smales, H. H. Gribble, John Russsll Walker, W. E. Brown, Thomas Lennox Walker. Thos. Batterbury, David Grant, and John Smith have recorded their votes. Contributors are respectfully requested to send in their votes at once.

H. W. R.—Apply to the Secretary of the Institute of British Architects, 9, Conduit-street, W.

Edward Skeritt.—Sketch returned.

A. E. Purdie.—No charge is made for inserting illustrations of works. The one you sent will appear.

Jas. Neale.—Sketch returned.

Correspondence.

CIRCULATING LIBRARIES.

(*To the Editor of the* Building News.)

Sir,—I am rather surprised to be reminded that the British Architects are the only scientific body in London that do not circulate their books among their members. In all other societies this is one of the chief privileges we get for our subscription. It is not supposed that a man engaged in professional pursuits can spend hours in a library between 10 or 12 a.m. and 4 p.m., and therefore it is provided that he can have books necessary for his pursuits. It is always understood that any one who is really engaged in the prosecution of any study shall have the use of books for even a lengthened period, provided he does not interfere with the convenience of any other member.

Certain books of reference must be always retained in the library; but, in a well-constituted society, there are duplicate sets even of some of these for the convenience of home students.—I am, &c., Hyde Clarke.

LIMES AND CEMENTS.

Sir,—In your excellent report of my paper, read before the Civil and Mechanical Engineers' Society, it is stated, with regard to blue lias lime, that—"The mortar is not of itself sufficiently hydraulic to set under water; but, if allowed to remain for twenty-four hours, the water has no effect upon it."

This is not correct; and is only true so far as the richer qualities of the blue lias lime are concerned. The lime made from the poor lias is eminently hydraulic; and concrete made with this lime, in the proportions of 6 parts of shingle to 1 part of lime (taken full), may be tipped into a river from a stage, and at the end of a fortnight will have become so hard as to be impenetrable to a pick. I should feel obliged by your inserting this in your next.—I am, &c.,

H. E. Hunt.

[⁂ In Mr. Bancroft's paper on this subject, on page 125, first column, line 24 from top, read from *one to three* parts of lime of the ordinary sort, instead of "seven to three," &c.—Ed.]

KITCHEN BOILER EXPLOSIONS.

Sir,—I have read the remarks of "T. S." at page 136. As to his first paragraph, he may as well tell us that the tea-kettle cannot explode as to refer to the kitchen "boiler," or rather *pan*, with movable lid. What has that to do with the close boilers, such as your correspondents were referring to?

As to his second paragraph, it is a perfect muddle, and judging by it, the writer either does not understand properly what he is writing about, or else is unable to express himself properly. So I must just refer your readers to my remarks in your issue of 10th inst., a little study of which, in connection with the sketch, will be useful, especially to non-practical men.

"T. S's" *cistern*, closed hermetically, is not, properly speaking, what is generally understood by the term "cistern," but then becomes a *tank*, as plumbers term it, which tank acts as an enlargement of the boiler; *e.g.*, a house of four flats may have the cold cistern in garret at top, and boiler in kitchen in lower flat, and, having no hot cistern, as I gave sketch of, they may place a close tank in corner (say) of kitchen near boiler, so that the water revolves between this tank and boiler as shown in fig. 1, A being the cold cistern, B the boiler, and C the tank. But it will be observed in this case that the revolving only takes place between B and C, the supply-pipe to boiler D keeping always cold, and merely acts as supplying cold water to B as the warm water is being drawn off from C. Then the idea of placing a "safety-pipe" up a chimney fifty feet high is simply absurd. It is not hot-water apparatus for heating a church, hot-house, or school-room we are treating of. "T.S." is right, however, as to saying that the up-pipe should not be put too far into the top of the boiler, as also regarding inclining the boiler the wrong way.

Fig. 2 is a sketch of a close kitchen boiler fitted up, as many are, without a hot cistern, and which style is liable to be the cause of explosions during frost. So far as *safety* is concerned, this, and the *tank* system above sketched, are about equal.

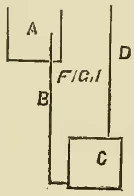

FIG. 1

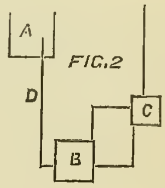

FIG. 2

A is the cold water cistern from which boiler is supplied. B the cold water pipe going down to boiler. C is the boiler. D the hot water or expansion pipe—from which the branches may be taken off—which rises higher than cistern and goes to outside, say to roof. In this case there is *no circulation*, and unless the cold pipe was protected by felt a cold draught in frosty weather might soon freeze it, and if fire went out, the pipe D also, before morning; in which case, if large fire was put on, away goes the explosion.

The third paragraph of "T. S." seems to me rather curious. The fourth is sensible when applied to patent extras. The fifth shows something wrong, for had the pipes been properly covered with felt we hardly should expect them to have been frozen; while the fact of the man taking away the "safety-pipe" shows how little value can be sometimes put upon such *extras*. Besides, supposing the people in house, depending upon such a safety, used boiler, and it got empty, then a sudden thaw coming on, what about boiler if red-hot? while, during the frost, there was the inconvenience of want of water? Therefore, for safety, convenience, and non-liability to go wrong, the plan in your issue of the 10th inst. will be found the best and safest, as well as simplest, if the things are done as I said.—I am, &c., Plumber.

Feb. 17th, 1871.

SATURDAY HALF-HOLIDAY.

Sir,—Allow me to thank you for inserting my letter on the above question in your impression of the 11th inst. Of 94 communications sent me on the subject I find the result to be that 83 of the offices close on Saturday earlier than on the other five working days of the week, the remaining 11 slaving on as usual. I presume I may be allowed to take this result as a fair representation of the extent to which the half-holiday is recognised by the architectural profession. If so, the proportion will be seen to be nearly 8 to 1. The question then comes to be, what is to be done with this ninth man who refuses to do as the majority of his brother architects do? Suggestions rise in one's mind with regard to him which have more direct reference to tailors than architects. At the same time, it would be a great matter to impress him with the fact that he is doing himself and his assistants a great injustice; for the advantages of the half-holiday are as much on the side of the principal as the assistant.

To speak of these advantages generally, they are summed up in recreation and study. Now I maintain that the man who has a few hours of every week to give to either of those purposes, benefits not only himself but his employer. If he gives the time to recreation, he is certainly physically able to do more work than if he had no time during the week to devote to such a purpose. If, on the other hand, he gives his time to study, his employer of course receives the benefit of it in having his work more carefully and skilfully done. I contend, therefore, that architects who deny their assistants this boon stand much in their own light, and deprive their assistants of the opportunity of keeping apace with the other young men in the profession.

May I be allowed to suggest that the Institute would be doing good service to the profession were it to strongly recommend to all architects the giving of the Saturday half-holiday.

I beg to thank those gentlemen who have so kindly assisted me in making public the above figures.

A. Y. Z.

SOCIETY OF ARTS.—ART WORKMANSHIP 1870-71.

Sir,—Under this head in your issue of the 3rd, inst., occurs the following:—" No 13, a panel in marqueterie, executed by W. Clayton, from designs by Mr. Bassett Keeling, is crude and inharmonious in colour."

Permit me to explain that I have no knowledge of W. Clayton, nor of the work in question. Unless the mention of my name is a mistake, I can only assume a surreptitious use to have been made of one of three drawings prepared by me, and from which Nr. Steinitz, of Camberwell Hall, executed the panels for the pulpit of my church of S. Andrew, Camberwell, some years since.

The panels in question represent half-length figures of "Moses, Elias, and Christ" as "the Law, the Prophets, and the Gospel," and are the only marqueterie panels for which I ever supplied the designs.

If my design has been used, I am obviously not responsible for the harmony of colour in a work not executed under my control or superintendence; and if there is a mistake, it is the more desirable, in justice to myself and the actual designer, that the mistake should be thus corrected.—I am, &c.,

Bassett Keeling.

THE ART WORLD.—SOUTH KENSINGTON.

Sir,—I beg to be allowed to make a few observations upon the editorial article under the above head, that appeared in the *Echo* newspaper of the 16th inst., in which the writer commences with the astounding assertion of the entire novelty of the design for the Hall of Arts and Sciences, now approaching completion, when that design is notoriously a direct copy of the Amphitheatre of Vespasian, at Rome, commonly called the Coliseum. The writer further alludes to the special beauty of the perfect fitness of the architecture for the intended uses of the building, an assertion literally true as regards the Coliseum of Rome, but inapplicable to the South Kensington Hall, for I have yet to learn that the arena is to be made use of for gladiatorial shows or other exhibitions. In fact, the uses of the Coliseum are actually to be reversed in the hall, by placing the audience in the arena, and exhibitors and exhibitions in the seats and galleries above—a disposition that will render this magnificent building nearly useless.

In regard to the question of beauty of design, I will venture to assert that, given the plan and dimensions, an equally good design could have been produced in any architect's office in London.

It is also rather trifling with the subject to urge the experimental mode of carrying on the building, when the builders had such a noble example before their eyes.

Moreover, the hall is intended to include a picture gallery at the top, which will require, of course, numerous flights of stairs, or the [disagreeable, and sometimes dangerous alternative of mechanical lifts. How much more convenient, and far more economical to have built an independent gallery on flat ground! Again, the desire now expressed that the delicate internal machinery of the great organ should be exposed to dust and smoke, is another absurdity that will require an army of cleaners all the year round. The true position of that unsightly musical machine, however profusely ornamented and gilded, would be in a chamber out of sight of the audience, but having a free acoustic communication with the hall.

To all these maladaptations of an ancient building to modern purposes is superadded the error of placing the speakers or singers at the greatest distance from their hearers; whereas, if the broadside principle had been adopted, with the stage or platform at the extremity of the lesser axis, the voice would have had only half the distance to traverse, and all other difficulties would have disappeared. The broadside arrangement would also afford the convenience of a wider stage than that of the largest theatre in London—an appliance that is now found to be indispensible in order to render any building intended for public exhibitions remunerative. The days of Exeter Hall are numbered, notwithstanding its very central situation, with nearly equal portions of London, east and west of it; while the Kensington Hall is situated in a remote suburb with the whole of the metropolis on one side only. In one respect, the ancients had a great advantage over us moderns, there was no charge for admission; ingress and egress was therefore free from all difficulty. The Coliseum at Rome had eighty entrances of about the dimensions of a barn door, while the Kensington Hall has only four.

Under these circumstances it is idle to talk of high art in designs for metropolitan public buildings, because the avenues of approach, which ought to be grand and noble to correspond with the structure, are obstructed and cut up with check-takers' boxes and their bars, besides that hideous engine of inquisitoral torture, the counting turn-stiles.

The so-called Central Albert Hall of Arts and Sciences, like everything else, is a commercial money-getting undertaking, and therefore the largest possible space is secured for the visitors, while the performers are screwed into the smallest. At the conversazione held at South Kensington by the Society of Arts, none of this scandal takes place, for each visitor is personally presented to, and received by some of the high authorities of that society.—I am, &c.,

C. E.

NEW LAW COURTS.

Sir,—The difference between the highest and lowest tenders (£31,000) for the foundation works, in your correspondent "F.'s" opinion is a matter not worthy of much, if any, consideration. His attempt, however, at a simple solution of the mystery respecting it, tends to make a bad matter worse, and is not only unsatisfactory, but very indiscreet. He accounts for the highest tender thus:—"Perhaps the contractor put them so for the purpose of keeping their names before the public, and possibly for fear of giving offence to the architect for not tendering, and without having the remotest intention of securing the job." If contractors do tender in this reckless, unmeaning way, having no other aim than "wireing in to keep their names up," of course one's wonder ceases at the wide range of tenders; but such a course of procedure must operate detrimentally to, and is unworthy of men in position; is a gross insult to an architect; makes tendering a burlesque; and a bill of quantities useless.

I am fully aware, though only a noviciate (I have no desire to be an "initiate" in anything dark, unfathomable, or questionable), that errors, both of omission and commission, are often perceptible in "bills" of surveyors, as well as in contractors' judgments, for none of us are infallible; but if the bills were to emanate from one source, the same to be approved and verified by the architect, discrepancies of much moment would be less likely to arise than if several surveyors contemporaneously supplied, as all competitors would compile their estimates from the same basis.—I am, &c.,

J. M. L.

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Intercommunication.

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QUESTIONS.

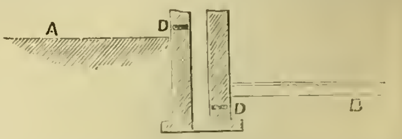
[2131] PLASTER CASTINGS.—Will any of your readers recommend me a cheap treatise on plaster castings?—C. T. T.

[2132] CUBING BUILDINGS.—In cubing a building for an approximate estimate of cost, is it in two-story dwellings customary to include in the measurement the depth of chamber floor-joists, the thickness of internal walls, and the space occupied by chimneys? Would the cellars also be measured? As a rule, is it usual to measure internally or externally, say from floor line to ceiling, or from ground line to and including roofs?—Wiltshire.

[2133] COMPETITIONS.—Would some of the subscribers to "Intercommunication" kindly favour me with their opinions on the following?—The authorities of a country town invite architects to send in competitive designs for a new townhall. An architect' sassistant, possessed of more than an average amount of ability, prepares a design during his leisure hours, which is eventually chosen by a committee appointed to adjudicate. What I desire to know is, would the authorities be justified in rejecting the design after finding that its author was an architect's assistant only, or could they be compelled to abide by their decision?—T. C.

REPLIES.

[2125] PROBLEM IN CONSTRUCTION.—The best plan will be to have a damp course of asphalte above the ground outside and under the hall floor inside, half way through the wall thus, D D D ground, and B floor of hall.



The walls of this hall being built with a hollow space admit of this being done with success.—W. R. A., Uckfield.

[2125] PROBLEM IN CONSTRUCTION.—If "A Cautious One" wishes to deserve his title, he will put the proof course under the joists of hall, and form a dry area outside.—P. E. M.

[2125] PROBLEM IN CONSTRUCTION.—A damp-proof course is necessary, and should be placed immediately below the floor-joist or wall-plate. Taylor's patent damp-proof course, or Doulton s, would be the very best material for the purpose, as it would answer three purposes, viz., completely prevent damp from rising, bond the two portions of wall solidly together, and admit the air beneath the floor of hall. Taylor's can be procured from Mr. George Jennings, and Doulton's from Henry Doulton & Co., High-street, Lambeth. They (the damp-proof courses) are very similar in character.—Wiltshire.

[2125] PROBLEM IN CONSTRUCTION.—Put in damp-proof course at two levels, one in the external half of wall above ground line, and the other in the internal half below the floor; neither course to project over the space between.—A. Z.

[2125] PROBLEM IN CONSTRUCTION.—If the floor of the hall is to be wood place damp course below it.—P.

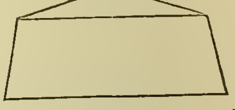
[2126] PLUMBERS' WORK.—I have used lead-headed nails, but as for "lead-soldered tacks," I would wish to know where they are said to be used, &c.—P.

[2126] PLUMBERS' WORK.—Lead soldered tacks mean nails or tacks for securing the sheet lead to woodwork, the heads of which are driven beneath the plane surface of the lead by means of countersunk holes made in the wood; these being then filled up with solder prevent, of course, water penetrating in the holes made by the nails.—Wiltshire.

[2127] ANCIENT CHURCH ARCHITECTURE.—A variety of books on this and other architectural subjects can be obtained at reduced prices at Mr. Batsford's, 52, High Holborn, and who would, no doubt, gladly send "W. H. B." a catalogue.—Wiltshire.

[2128] ISOMETRICAL PROJECTION.—The "Illustrated Loudon Drawing Book," by Scott Burn, price 2s.—Wiltshire.

[2129] MANSARD ROOFS.—The roof delineated is not a mansard. The mansard roof is shaped thus:



Call the roof what it is, a high or tall roof.—P. E. M.

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WATER SUPPLY AND SANITARY MATTERS.

Proposed Pure Water Supply for South London.—Waterworks are in course of construction at Highland Park, Leatherhead, on the edge of the chalk range. The supply of water obtainable is practically unlimited. The water is said to flow under-ground through fissures in the chalk like a huge lake, and the wells are replenished as fast as exhausted by any pumping apparatus at present applied. At present the springs overflow into the Mole, the waters of which run into the Thames at Moulsey and then at Thames Ditton. A portion of these waters, after being contaminated with the drainage of the Upper Thames, is taken from the river at Hampton and other points for the supply of a great portion of London. Why not, suggests a local paper, intercept the waters while pure in their chalk beds, instead of allowing them to run into the Thames, and then having to filter and re-purify them—the latter very ineffectually? The supply under the chalk region will, it is estimated, certainly be found ample for the southern and eastern waterworks, which seem at present to be the worst supplied in point of quality of any of the London companies. As to cost, nothing is required but a pumping station and reservoir on the top of one of the chalk hills; the softening would be done at the reservoir, and pipes might be laid along the side of the South Western Railway to Lambeth, a distance of fifteen miles—only at much less cost and inconvenience than is caused by taking up roads and streets.

The Lambeth Potteries' Nuisance.—The action taken by the Lambeth authorities and the Archbishop of Canterbury in order to stay the long-standing nuisance arising from the noxious vapours allowed to escape from Messrs. Doulton's and Messrs. Stiff s potteries having proved ineffectual, the inhabitants of the Middlesex side of the rive are bestirring themselves in the matter, and the Westminster District Board of Works have resolved to instruc its solicitor to take the necessary steps for the abatemen of the nuisance. When the matter was brought forwar by the Archbishop of Canterbury a short time back, th magistrate ruled that under the existing Acts bearing o the subject he had no power whatever to convict, as the nuisance complained of arose from the escape of white vapour, whereas the Acts only made penal the escape of dense black smoke. If this is the case, it is to be hoped that, in the new Sanitary Act which will follow upon the Report of the Royal Sanitary Commission, this imperfection and inequality in the law will be remedied.

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STATUES, MEMORIALS, ETC.

Charles Dickens.—A bust of the late Charles Dickens has just been executed by Mr. W. F. Woodington, jun. The sculptor is the son of the artist who designed the bas-relief of "The Nile" on the Nelson column, in Trafalgar-square, and that to the memory of Wellington in S. Paul's Cathedral.

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LAND AND BUILDING SOCIETIES.

Market Harborough.—The first annual meeting of the Market Harborough and District Permanent Building Society was held a few days ago. During the short time the society has been in operation upwards of 370 members have been enrolled as depositors; £400 has been advanced on mortgage, and other applications for advances have been received, which are under consideration; and, in order to estimate the general working of the society, it is fully hoped and anticipated that as future funds become available for investment there will be no lack of borrowing members.

People's Co-operative Benefit Building Society.—The twenty-third annual meeting of this society was held at Deptford on Wednesday week. The report of the directors reported a steady increase in the capital of the society, which has now reached £46,392. The amount received during the past year under the head of "member's subscriptions" was £13,725 17s. 0d., and the withdrawals were less by £1,150 than in the previous year. £5,215 was advanced during the year. After providing for every liability there is a realised profit of £472 12s. 6d. From this the directors recommended the payment of a bonus of 2 per cent. on all shares two years old and upwards; also £80 to the directors and £20 to the secretary.

Warwick and Warwickshire Benefit Building Society.—The annual general meeting of the above society was held in the Court-house, Warwick, on Monday week. The report showed that the total receipts for the past year amounted to £3,025 14s. 6d., and that after paying expenses a balance of £542 4s. 11d. remained in the banker's hands, and a reserve fund of £38 0s. 11d. 37 shares have been sold at the average premium of £2 10s., which enables the committee to pay a profit of 3s. per share in addition to the annual interest of £4 per cent.

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LEGAL INTELLIGENCE.

Most Important to the Building Trade.—Decision on the Long-pending Question of "Grinding Money."—This was an action brought at the Westminster County Court, February 21st (before F. Bayley, Esq., Judge), by the plaintiff, William Hayden, a journeyman carpenter, against the defendant, Mr. Charles Fish, carrying on an extensive trade as a builder at Cambridge Wharf, Pimlico, to recover 2s. for "grinding money," and 1s. loss of time in going for it. The case excited great interest in the building trade, by members of which the Court was throughout its hearing crowded.—Mr. Smith, solicitor, Denbigh-street, was for the defendant.—Plaintiff stated that he had been in defendant's employ seven months up to the 28th of January last, at mid-day, and was then suddenly discharged without previous notice, when claiming 2s., as usual, for "grinding money," viz. sharpening tools, it being refused, these proceedings were taken.—By Mr. Smith: He was at the time at work at the houses 18 and 19, New Bond-street, and paid weekly at temporary offices in Avery-row, where after he was dismissed by Petters, the foreman, applying to the clerk who paid him for the first sum now charged, the reply was that he knew nothing about it, and that he had better see defendant, for which he went purposely to the wharf. He had been in the trade many years, and had, when claiming, always received "grinding money."—Several journeymen carpenters gave corroborative evidence as to the charge so made being right; one of them saying that he had been paid the same by Mr. Myers, the well-known builder.—Mr. Smith, in reply, said that although the claim was for so small an amount, the case was one of great importance to all and every one connected with the building trade, the question of the allowance of "grinding money" by masters having been in abeyance ever since the celebrated "lock-out" or strike in 1859, since which the hour system, or paying by the hour, had been adopted, and the "grinding money," which was only then in some instances allowed, discontinued. In proof of such being the law acted upon, he would refer to the report of a similar case as the present heard before Mr. Whitmore, Judge of Lambeth County Court, who decided in favour of defendant. He wished, also, to say that the paying of such was discountenanced by some of the greatest firms in London, including Brown & Henderson, Kelk, Myers, Cubitt & Co., and others. He would now call his client.—Mr. Charles Fish, the defendant, deposed that he had been in business 22 years, and, as Mr. Smith said, knew of no "grinding money" being allowed since 1859, and then only done by custom in the trade.—Mr. F. J. Mullett said that out of 15 years he had been clerk, he had acted as such for 12 to defendant, and never knew the allowance of such money by him or any other builder.—His Honour, in giving judgment, said he was very glad the case heard by Mr. Whitmore had been introduced, for in consequence of that, and there being a variety of opinions on the question, he had convened a meeting with that gentleman, Messrs. Kelk, Myers, Cubitt, and others, the result of which was his opinion that the so-called "grinding money" could not be claimed as a right, there being no law to make it payable. Under these circumstances, merely adding that the charge of a shilling for going to Cambridge-wharf was absurd, his decision would be for the defendant. Judgment so entered, with costs.

Our Office Table.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, the 13th inst., the following name was read and passed for ballot, viz.:—as Associate,—Thomas John Robert Davison, Bedford Office, Montague-street, W.C. The adjourned discussion on Mr. Mathews' paper, entitled "The Valuation of Annuities and Reversions Dependent upon Terms of Certain Duration," was resumed, and after a long debate was again adjourned to the next meeting. The following candidates were balloted for and declared duly elected:—As Members—Richard Albert Notley, 27, Royal Exchange; Perry St. Quintin, 27, Royal Exchange; as Associates—Edward James Castle, 4, Brick-court, Temple; Arundel Rogers, 2 Paper-buildings, Temple; Hugh Shield, 3, King's-bench-walk, Temple; Julian Horn Tolmè, 1, Victoria-street, Westminister; Frederick Meadows White, 4, Paper-buildings, Temple. The next meeting will be held on Monday evening, next, the 27th, when the discussion on Mr. Mathews' paper will be resumed. The following candidates will be balloted for, viz.:—As Members—Rowland George Fisher, 17, Great George-street, Westminster; William Frederick Hart, 16a, King's-road, Bedford row; William Knowles, King-street, Gloucester; as Associate—Joseph Quick, jun., Sumner-street, Southwark.

Bathing.—Bathers will be glad to learn that there is a prospect of getting a decent bath at Henley-on-Thames. The great complaint of boating men and visitors last season was that there was "nowhere to bathe." We understand that a company is in course of formation to provide good accommodation, and a plan prepared by their architect, Mr. F. Haslam, has been laid before the Thames Conservancy Board and obtained their sanction.

The Victoria Embankment.—During the late frost very little progress was made with the approaches to the Thames Embankment. A portion of the approach, however, from Arundel-street, leading east, is now open to traffic, and the outworks in the direction of Craven-street are still at a standstill. It may be mentioned that it is the intention of the Metropolitan Board of Works to erect an ornamental fountain on the embankment, near the Charing Cross Railway Bridge, at a cost not exceeding a £1,000. The designs for the same have been submitted, but not yet finally decided on. The Board has approved of a design for a memorial fountain, in honour of the late Judge Payne, the cost of which will be defrayed by the Metropolitan Free Drinking-Fountains Association.

India.—The Calcutta Municipality have determined to have a market of their own, and have applied to Government to authorise a loan.—The new Palace, built by the Public Works Department of India on Government account, for H.H. The Nawab at Moorshedabad, having already cracked in many parts, the engineers and architects have been called on by the Government for an explanation. What will the new Engineering College do?

The Forthcoming Exhibition.—The encaustic and majolica tiles to be exhibited by the firm of Messrs. R. Minton, Taylor & Co., of Stoke-upon-Trent, have been made chiefly from designs by Mr. E. Welby Pugin and by Mr. John Gibbs, of Oxford. We understand that during the last three years Mr. Gibbs has been similarly engaged for other eminent firms, and is now completing a set of designs for Messrs. Malkin, Edge & Co. This will make the number of his designs for tiles made in the time stated over a thousand.

The Tay Bridge.—We understand that a fresh contract has been entered into for the construction of this bridge. The present contractors are Messrs. Berberg & Co., of London. The contract price for the work is £217,000, or about £12,000 less than the first contract. The bridge is to be supported on a number of columns. Cylinders are to be sunk in the river and deposited on the rock foundation. Machinery is fitted up in the cylinder, and by means of it the ground at the base is brought into a state resembling that of mortar. The great weight of metal gradually forces itself through the soft substance, and ultimately secures a firm foundation on the rock. Workmen are then able to build the column, which is encased in the iron cylinder. The bridge will consist almost entirely of iron.

Northern Architectural Association.—The annual meeting of the Northern Architectural Association was held on Tuesday week at Newcastle-on-Tyne. The report (which congratulated the society on its increased prosperity) having been adopted, Mr. A. M. Dunn read a paper on the "Reparation of the Roof of S. Mary's Cathedral, Newcastle, which was affected by dry rot," after which the President, Mr. F. R. Wilson, read his annual address.

New Premises for the London School-Board.—Our readers will be interested in learning that the London School-Board have taken the house, No. 33, New Bridge-street, Blackfriars, for three years. This is the building which has been so favourably noticed by architectural writers as providing an example in the right direction for the development of a style of street architecture suited to modern requirements. It was built from the designs of the late Mr. Woodward for the Crown Insurance Company, but having been purchased by the Chatham and Dover Railway Company at the time of the construction of the Ludgate-hill Station, it has remained unoccupied for the last three or four years.

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MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.*—Adjourned Discussion on Mr. Mathews's paper "On the Valuation of Annuities and Reversions Dependent upon Terms of Certain Duration." 8 p.m.
Architectural Association.—"On Limes and Cements." Lecture IV. By Lieutenant-Colonel Scott, R.E. 7.30 p.m.

Tuesday.—*Institution of Civil Engineers.*—"An Account of the Basin for the Balance Dock, and the Marine Railways in connection therewith, at the Austrian naval station at Pola, on the Adriatic." By Mr. Hamilton E. Towle,. 8 p.m.

Wednesday.—*Society of Arts.*—8 p.m.

Friday.—*Civil and Mechanical Engineers' Society.*—"On Tin-mining in Cornwall." 7.30 p.m.

Saturday.—*Associated Arts' Institute.*—"On Fresco-painting." By W. Cave Thomas, Esq. 8 p.m.

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Chips.

The honour of knighthood is to be conferred on Mr. Boxall, R.A., on his retirement from his post at the Royal Academy.

The Westminster District Board of Works has resolved to purchase of the Metropolitan District Railway Company a small piece of land near the Broadway railway station, for the purpose of effecting a street improvement, provided the same can be had for £150, of which sum the Metropolitan Board has agreed to contribute one-half.

The library and galleries in the Vatican have been declared to be national property by the Italian Parliament, notwithstanding ministerial efforts to the contrary.

It is proposed to erect a temporary small-pox hospital on the ground between the Thames Embankment and Cannon-row, immediately adjoining the end of Richmond-terrace, Whitehall.

A large painting of the Transfiguration has been presented to S. Mary's Church, Prestbury, by Cheltenham friends.

On the 14th inst., Mr. W. H. White, Assistant-Surveyor, Norwich, was elected Surveyor to the Oxford Local Board of Health. There were 69 candidates for the appointment.

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Timber Trade Review.

Prices 21st February:—Wyburg best yellow millsawn, 8*l* to 9*l* 10*s*; Tornea mixed millsawn yellow, 8*l*; Sundswall mixed whitewood, 8*l* 10*s*; do 3rd whitewood, 7*l* 10*s*; do 4th whitewood, 6*l* 10*s* to 7*l* 5*s*; do mixed millsawn yellow, 8*l* 10*s* to 9*l*; do 3rd yellow, 7*l* 5*s* to 7*l* 10*s*; do 4th yellow, 6*l* 10*s* to 7*l* 5*s*; Skutskar mixed millsawn yellow, 10*l* to 10*l* 10*s*; do 3rd millsawn yellow, 8*l* 5*s* to 9*l* 5*s*; do 4th millsawn yellow, 7*l* 10*s* to 8*l* 5*s*; Sandviken mixed millsawn yellow, 7*l* 10*s*; do 3rd millsawn yellow, 7*l*; Sannesund yellow, 7*l* 10*s*; Ornskoldvik millsawn yellow, 7*l* 5*s*; Naset 3rd millsawn yellow, 7*l* 5*s* to 7*l* 10*s*; do 4th millsawn yellow, 6*l* 15*s*; do 4th millsawn whitewood, 6*l* 15*s*; Munksund 1st yellow, 9*l* 5*s*; Sund 4th yellow, 7*l* 5*s*; Skonvik mixed yellow, 9*l* 5*s* to 9*l* 10*s*; Riga crown whitewood, 8*l* to 8*l* 5*s*; Petersburg Gromoff's yellow, 12*l* 15*s* to 13*l* 10*s*; do 2nd yellow, 9*l* to 9*l* 5*s*; do 1st whitewood planks, 9*l* 10*s* to 9*l* 15*s*; deals, 9*l*; battens, 7*l* 10*s* to 8*l*; Pitea 1st yellow, 7*l*; do 2nd yellow, 6*l* 10*s*; do 3rd yellow, 6*l* 5*s*; do 4th yellow, 6*l*; Archangel 3rd yellow, 3 × 11, 9*l*; 3 × 7, 8*l* 10*s*; 2½ × 7, 8*l* 5*s*.

Per 120 12ft. 3 × 9.—Christiana 2nd yellow, 13*l*; Quebec 1st spruce, 18*l* to 18*l* 5*s*.

Memel crown logs, 2*l* per 18ft. cube; black walnut, 2*s* 6*d* to 2*s* 8*d* per foot cube.

Flooring boards.—Petersburg 1st yellow, ⅞in., 8s 6*d* per square; do 2nd yellow, 1¼in., 11*s* 6*d*; 1in., 8*s* 9*d* to 10*s*; ⅞in., 8*s* to 8*s* 9*d*; Fredrickstadt 3rd yellow, 1¼in., 10*s*; 1in., 8*s*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:—

Pig Foreign	per ton	£17	10	0	£17	12	6
,, English W.B.	do	19	10	0	19	12	6
,, Lead Co.	do	18	12	6	18	15	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled	do	19	0	0	19	10	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

COPPER:—

British—Cake and Ingot	per ton	£74	0	0	75	0	0
Best Selected	do	76	0	0	77	7	0
Sheet	do	79	0	0	0	0	0
Bottoms	do	80	0	0	81	0	0
Australian	do	72	0	0	75	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	66	0	0	67	0	0
,, Refined ingot	do	71	0	0	72	10	0
Yellow Metal	per lb	0	0	6¾	0	0	7

IRON:—

Pig i Scotland, cash	per ton	£2	12	3	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
,, Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	7	6	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	15	0	10	0	0

TIMBER.

Teak ... load	£12	10	13	10	Finland	£7	0	£8	0
Quebec, red pine	3	15	4	15	Memel	0	0	0	0
,, yellow pine	4	5	5	0	Gothenburg, yellow	8	10	10	10
St. John N.B. yellow	0	0	0	0	,, white	8	0	8	10
Quebec Oak, white	6	0	6	5	Gefle, yellow	10	10	12	0
,, birch	3	15	5	0	Soderham	8	10	12	0
,, elm	4	5	4	15	Christiania, per C.,				
Dantzic oak	5	5	6	15	12 ft. by 3 by 9 in.				
,, fir	2	12	4	10	yellow	10	0	12	10
Memel fir	3	0	4	5	Flooring boards, per	s.	d.	s.	d.
Riga	3	5	3	10	sq. of 1in., first yel	7	6	10	6
Swedish	2	5	2	15	First white	7	0	9	6
Masts, Quebec red pine	4	0	5	5	Second qualities	6	0	7	0
,, yellow pine	4	0	5	5	PUMICE STONE pr ton	6	0	8	0
Lathwood, Dantzic, fm	3	0	5	0	OILS, &c.				
,, St. Petersburg	5	0	5	10	Seal, pale ... per ton	£37	0	0	0
Deals, pr C., 12 ft. by 3					Sperm body	84	0	84	5
by 9 in.,					Cod	35	10	0	0
Quebec, white spruce	12	0	17	0	Whale, Sth. Sea, pale	36	0	37	0
St. John, white spruce	12	10	14	0	Olive, Gallipoli	50	0	0	0
Yellow pine, per re-					Cocoanut, Cochin, ton	45	0	47	10
duced C.					Palm, fine	38	10	39	0
Canada, 1st quality	18	0	19	10	Linseed	31	0	31	5
2nd do.	12	15	13	10	Rapeseed, Eng. pale	47	0	47	10
Archangel, yellow	11	10	13	10	Cottonseed	29	0	35	0
St. Petersburg, yel.	12	5	13	5					

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Trade News.

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TENDERS.

BRISTOL.—For new chapel, Stapleton-road, Bristol. Mr. Hans F. Price, architect :—

Beavan	£2245
Dinke	1929
Foster	1890
Wilkins	1878
Diment	1849
Eastabrook	1840
Stephens	1800
Lowett	1565
Somerville	1252

BOGNOR.—For the completion of house on the Victoria Park estate, Bognor, Sussex. Mr. A. Smith, architect :—

Hayward	£275	6	4
Booker & Sons	251	0	0
Learmouth	243	10	0
Goble (accepted)	238	10	0
Wade	222	0	0

CHESHUNT.—For the erection of a farmhouse at Cheshunt. Mr. T. J. Hill, architect :—

Bayes & Rammage	£1730	0
Field & Son	1700	0
Bentley	1541	15
Sabey & Son	1500	0
Patman Bros	1469	0
Rist & Brown	1457	0
Saunders	1425	0
Archer	1115	0

CITY.—For alterations and repairs to No. 3, Old Fish-street-hill. Messrs. E. Woodthorpe and J. M. K. Hahn, architects :—

D. W. Prince	£672
Messrs. Perry Bros.	657
John Woodward	620

HIGHBURY.—For erection of chimney shaft and alterations for London General Omnibus Company, under superintendence of Mr. Tosh :—

Merrion	£379
Williams & Son	297
Eaton & Chapman	290
Mann	289
Bowman	273
Wicks, Bangs, & Co.	268
Harris	262
Rivett	252
Ennor	242
Blackmore & Morley	222
Ford (accepted)	221

ISLINGTON.—For laying in drains and forming roads at Liverpool-road, Islington. Mr. C. Hambridge, architect :

Pubble	£1515	0
Gregory	1400	0
Snowdon	1195	0
Cochran	770	10

LITTLEHAMPTON.—For alterations to the "George Inn," Littlehampton, Sussex, and converting same into offices; also the erection of private residence at side. Mr. A. Smith, architect. Quantities supplied by Mr. G. W. Ranwell, 3, Westminster Chambers, Victoria-street :—

1st Estimate	£3011
2nd ,,	1832

Snewin (accepted).

NORWOOD.—For finishing two houses, Bankside Villas, Norwood. Mr. J. Laforest, architect :—

Niblett	£670
Pubble	640
Snowdon (accepted)	630

SLINDON.—For erection of schools at Slindon, Sussex. Mr. A. Smith, architect. Quantities supplied by Mr. G. W. Ranwell, 3, Westminster Chambers, Victoria-street :—

Marshall	£1029	16	8
Cheesman & Co.	958	0	0
Ellis	929	0	0
Goble	880	0	0
Bushby (accepted)	800	0	0

STOKE NEWINGTON.—For the erection of stabling, &c., for the London General Omnibus Company, under the superintendence of Mr. Tosh. Quantities supplied by Mr. A. J. Bolton :—

Rivett	£1558
Merrion	1435
Williams & Son	1357
Bowman	1287
Eaton & Chapman	1250
Till (late)	1230
Blackmore & Morley	1215
Crockett	1210
Mann	1168
Blease	1082
Ford	1070

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

BOLTON.—Contract C.—March 3.—The Corporation of Bolton are prepared to receive tenders for the joiners' work, plastering, painting, glazing, and plumbers' fittings required for the completion of the new town-hall. The drawings and specifications may be seen, and bills of quantities obtained, on application at the offices of Mr. William Hill, architect, Park-square, Leeds; or at the offices of Mr. George Woodhouse, architect, St. George's-road, Bolton, between the hours of 10 a.m. and 5 p.m., from the 16th day of January next to the 3rd day of February next. Sealed tenders are to be sent in not later than 12 o'clock at noon of Friday, the 3rd day of March next, addressed to the undersigned at the Corporation Offices, Acres Field, Bolton, and endorsed "Tenders for the Town-hall, Contract C." R. C. Hinnell, Town Clerk.

SUDBURY WATERWORKS, March 4.—Contract No. 4. Construction of a covered service reservoir. Contract No. 5. Supply, laying, and fixing of about five miles of cast-iron water-pipes, with sluice-cocks, hydrants, and other appliances, and some ironwork required for reservoir. Mr. Hennell, 7, Salisbury-street, Adelphi.

EAST BARNET (Herts), March 1.—For the construction of about 4,800 yards of outfall sewer, of brick or stoneware pipes. Messrs. Lawson & Mansergh, 3, Westminster-chambers, Victoria-street, Westminster.

HARWICH, March 7.—War Department triennial contract for builders's work. Royal Engineer's Office, Colchester.

ROPLEY (Hants), March 4.—For the erection of a house and offices at Lyewood, Ropley, Hants, for Mr. John Lillywhite. W. H. Hunt, architect, Alresford.

NORWICH, March 7.—War department triennial contract for builders' work. Royal Engineer's Office, Colchester.

ST. JOHN'S, HAMPSTEAD, March 3.—Contract for road materials, and for paving and kerbing. William Gribble, Vestry Clerk, Vestry Offices, New End, Hampstead.

HUNSTANTON, March 4.—For the erection of nave and north aisle of new church at St. Edmund's. Frederick Preedy, architect, 13, York-place, Portman-square, London, W.

MAIDSTONE, March 6.—War Department contract for bricklayers', masons', paviors', carpenters', plasterers', slaters', plumbers', smiths', painters', glaziers' and paperhangers', and gasfitters' work. Royal Engineer Office, Chatham.

HINCKLEY LOCAL BOARD, March 6.—For the sinking of a bore-hole and well, on the site of their intended waterworks. Samuel Preston, Clerk to the Board, Hinckley, Leicestershire.

HEADBOURNE WORTHY, HANTS, March 4.—For the erection of a gentleman's residence and stable buildings, at Headbourne Worthy, near Winchester, Hants. John Dolson, St. Swithin's-street, Winchester.

FAWSLEY (Northamptonshire), March 13.—For the erection of farm buildings. Mr. Waters, Fawsley Estate Office.

MAIDSTONE, March 2.—For the erection of the proposed new schools for girls and infants, on St. Faith's-green. E. W. Stephens, architect, 87, Week-street, Maidstone.

HEREFORDSHIRE, March 7.—Thornbury United School.—For the erection of a school for fifty-four children, with mistress's residence, at Thornbury, three miles and a half from Bromyard. W. West, solicitor, Bromyard.

COLCHESTER, March 7.—War Department triennial contract for builders' work. Royal Engineer's Office, Colchester.

PORTSMOUTH, March 10.—War Department triennial contract for builders' work. Royal Engineer's Office, Portsmouth.

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BANKRUPTS.

(TO SURRENDER IN LONDON).

Charles Taylor, John-street, Upper Holloway, contractor, Feb. 28, at 12.—Thomas Hutchings, Alwin-road, Lewisham-road, contractor, March 8, at 12.

(TO SURRENDER IN THE COUNTRY).

George Hardy, Kirkdale, near Liverpool, builder, Feb. 28, at Liverpool—Henry Stevens, Swaffam Bulbeck, builder, March 3, at Cambridge.—Jane Stow Nelson, plumber, March 9, at Burnley.

PUBLIC EXAMINATIONS.

March 17, W. I. Jones, Grove-road, Acton, builder—March 23, J. West, Chichester, builder.

DIVIDEND MEETINGS.

March 11, J. Chesterfield, Godmanchester, cement factor—March 7, R. Askew, Great Ponton, builder—March 7, J. Wright, Stamford, ironmonger—March 15, E. Finch, Chepstow, engineer.

DECLARATIONS OF DIVIDENDS.

J. Perkins, East Dereham, builder, div. 4s., Feb. 27—T. W. & H. Panton, Monkwearmouth, ironfounders, div. 2s. 10d.

SCOTCH SEQUESTRATIONS.

Adam Lumsden, North Middleton, near Gorebridge, builder, Feb. 27, at 2—John Henderson, jun., Helensburgh, ironmonger, March 2, at 12.

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PARTNERSHIPS DISSOLVED.

Norcliffe & Co., Sowerby Bridge and elsewhere, masons—Bay & Brett, Ventnor, builders—W. & S. Collier, Bridgend, Glamorganshire, lime merchants—J. & T. Barralet, Holywell row, Shoreditch, sanitary pottery dealers.—Rigby & Sager, Blackpool, joiners—Lewin & Clarke, Barrow-on-Soar, lime merchants.

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THE BUILDING NEWS.

LONDON, FRIDAY, MARCH 3, 1871.

ARCHITECTURAL PROBLEMS OF THE DAY.

WE noticed a week or two since two very different sorts of originality which show themselves in various classes of modern work : one sort sterile, purposeless, and ending in itself ; and another fruitful, suggestive and bearing the germs of future development : and we tried to point out that the valuable kind of originality is not that of the artist who sits down deliberately to produce novelties, but of the one who, having new problems to deal with, inevitably finds, when he has mastered them, that he has arrived at new solutions. There is no lack of such problems at the present moment—seldom perhaps, since architecture first began, have there been so many : and in calling attention to a few of them we may possibly help to turn into a useful channel some of the force which is now wasted in vain and aimless efforts. To arrange in a connected scheme all the questions which occur would occupy, not an article, but a book ; we can here only attempt to name a few of them disconnectedly, as they happen to suggest themselves.

The first, and most urgent class of problems, includes those which relate to general design and arrangement. The modern architect has to deal with a multitude of buildings for which no ancient precedents exist : how is he to treat them ? Suppose, for example, he is planning a large church, say for 1500 people, and suppose his clients are so unreasonable as to wish all these people to be placed in sight and hearing of the service, how is he to effect this at moderate cost with architecture worthy of the name ? Here alone is a problem, to begin with, which one man's lifetime would be too short to solve completely. Here is not only an opening, but an urgent need for originality : a case where originality is not merely desirable but absolutely indispensable. And what sort of treatment does it meet with ? Nineteen times out of twenty, the problem is absolutely ignored—there is not a single step taken towards its solution. Either convenience alone is attended to, and the result is a "preaching-shed," disguised with a lot of vulgar finery ; or art is the one thing followed, and the product is a beautiful church with no fault except sheer unfitness for its purpose. The architect, perhaps, has introduced much novelty into the carving of the capitals ; his window-tracery is singular and noteworthy ; he has even brought from the Continent a tower and spire of extraordinary quaintness ; but where the design called aloud for original thought—in its general planning and construction—he has not an idea to give us. Much the same is it with other buildings for public assembly. How should they be treated, when above a very limited size, so as to be successful internally and externally ? There are our concert-rooms, like Exeter Hall and St. James's Hall ; if they are to be built without columns, how are we to treat them on the outside to make their wide roofs and awkward proportions endurable ? If, on the other hand, they are to be built with columns, where can these columns be least objectionably placed, and how, if they are of iron, can they be satisfactorily treated ? There are our theatres, the very centres of all that is architectually false and hideous. How can we make them honest in construction, simple and natural in design, fit for their intended use, and yet capable of yielding a sufficient return for the money invested in them ? For those who have the opportunity of dealing with it, here is another problem almost large enough by itself to satisfy one man's ambition. Then again there are our large railway stations : each of them, in their present state, enough by itself to spoil the finest view into which it intrudes : each of them, like those at Cannon-street, Charing Cross, and St. Pancras, so monstrous in its size, so astonishing in its shapeless deformity, that the mind can fix on nothing else while such an abortion is visible. Is it enough to dot over the walls of such a thing with bits of Gothic detail, and to leave its chaotic mass untouched ; to sing songs of triumph over the "wonderful success with which Mediæval principles have been applied to a railway terminus," when the very sight of it a mile off might have filled any Mediæval builder with horror ? We are not complaining of Mr. Scott, who, in his department doubtless did what was possible at St. Pancras. What we maintain is, that general design, here as elsewhere, is the first thing that demands attention, though unfortunately the last thing that usually receives it. Is it really essential that these vast stations should be covered in one span ? or are the pleas put forward only meant to reconcile the public to a frightful eyesore, and the shareholders to a needless and wasteful expense ? Is not the fact at bottom this, that the average engineer cannot understand any greatness except that which is measurable in feet and inches, and thinks that to put up a wider roof than anybody else is to prove himself a greater man ? In this case it might be better for all parties to let him satisfy his ambition elsewhere ; to find him a piece of waste ground, and pay the cost of erecting on it one truss as wide as he could possibly contrive, and then, having immortalized himself in the only way he can conceive of, to let him act, in his practical works, with an eye to such trivial matters as economy and beauty. But however this may be, the general arrangement and construction of our larger railway stations presents one of the chief architectural difficulties of the time—one that is none the less truly architectural because it is seldom an architect whose business it is to grapple with it. We might go on enumerating, did space allow, many more types of modern building, each of which is a problem by itself. But a little reflection will furnish our readers with the list, and we therefore pass on to a wider question. What should be the general character and expression of our town architecture ? What sort of grand combined effect can be got out of all the diverse designs which make up a modern city, or is there no such effect to be produced at all ? Is it possible for us all, working each in his own way, and for his own ends, to make up, notwithstanding, a perfect and harmonious whole, or must we go on, as now, in discord and confusion, each work injuring other works, and being injured by them ? We look abroad, at certain Mediæval cities, and at certain other newly built ones, and see that both, in different ways, have arrived at a grand combined result. The first have done it by picturesqueness and freedom—by bringing out the individuality of every separate building, and emphasizing it by adopting, in short, a vertical type for their street architecture. The second have done it by uniformity and stiffness—by suppressing individual character, by settling every height and width, and projection, according to unalterable rules, by taking up the horizontal principle and imposing it on everyone, by obliterating the individual houses, and caring only for the general mass of buildings. Is there any prospect, in England, of getting the latter system enforced by law ? Is it likely ever to be generally followed without such enforcement ? and, if not, is not the opposite system the only practicable, even if not the only desirable one ? Seeing that we cannot make our streets uniform, is not the only true course to make them picturesque ? To answer such questions as these is to do something towards solving the problem of how to produce harmony in our town architecture ; how, at last, to make our cities a grand whole filled with beautiful and harmonious parts, instead of a chaos of mutually destructive elements. And where they are answered. either one way or the other, a multitude of other questions suggest themselves. Suppose the uniform and horizontal type of street architecture is set aside as impossible for us. Suppose the opposite type, where every separate building is individualised, proves itself to be the only one on which we can gain any sort of combined result. The first step towards its adoption—towards the marking off of each design from the rest, can hardly fail to be the introduction of a certain verticality into the composition. The heavy cornice is the natural crowning member on the uniform and regular type ; when every house is made to range in height, a long unbroken line of such cornices binds the line together into what may be made one grand perspective. But the steep roof or gable is the most attractive finish on the alternative system ; standing out against the sky, it marks off, as nothing else can, where the strip of elevation which it belongs to begins and ends. In London, however, the Building Act binds us down, for warehouses, to a certain limit in pitch ; and in private houses, rooms wholly in the roof find little favour. It is, therefore, a matter for consideration whether steep roofs are essential to a picturesque street architecture, and especially to one developed on a Gothic basis ; whether we can overcome in some cases the practical objections to them, and in other cases, dispense with them altogether.

Descending further into detail, the modern architect is met by unsolved, or as yet but half-solved, problems at every step. We can here only indicate a few of them in the briefest manner. What, for instance, is he to make of wrought-iron girders ? May he use them, say, to carry the wall above a shop-front, and if so, is he to show them or conceal them ? If he shows them, how far can they be made to harmonise with the brick or stone arches in the rest of the elevation ? What, again, is he to make of iron roofs, and how is he to make their wiry lines agree in any way with the broad wall surfaces on which they rest ; and how is he to finish his ironwork—by painting, or bronzing, or enamelling—so as best to bring out its metallic character ? We could point to examples where something has been done towards answering each of these questions ; but in the average of recent work they scarcely seem to have had a thought. Then, in a very different department, how is the London architect to protect his work from London smoke ? Of course, if he feels that it is not worth protecting, and is satisfied with Bath stone and stock bricks, he escapes this problem. But, in the opposite case, what are the best materials to use, granite and marble, terra-cotta, or glazed bricks ? And how should his design be modified to suit each of them ? Next, having settled how to make his works smoke-proof, he may consider how to make them partially or wholly fire-proof. As far, at least, as the staircase is concerned, this ought to be done in every house—not, if we may trust Captain Shaw, with stone, but with some material that fire will no more break than burn. Then there are the questions of how to ventilate houses, how to warm them more thoroughly and less wastefully ; how to get the plumbers' work a little nearer perfection, and at least to keep the water-pipes from bursting every frost ; how to improve the design of a multitude of details, such as chimney-pieces, grates, and ironmongery ; how to use sash-windows and plate-glass with good effect in a Gothic building, or what to substitute for them ; how, in short, to adapt old styles to modern uses, and to bring into the field of architecture the waste and uncultivated deserts which now stretch all around and wait to be reclaimed. We do not pretend to have indicated a tithe of the problems which are pressing for attention. These, however, may be enough to show that there is no want of subjects just now for thought, and that the designer who wishes to be original is not obliged to concentrate his talents on the production of some new form of moulding or chamfer-stop.

ARCHITECTURAL PARIS.

THE interest felt by the whole civilised world during the siege of Paris was of a double character: it first touched the population, and next the city. From all Europe there came a cry of hope that the beautiful capital would be spared, apart from all questions of humanity; for, beyond a doubt, it was the most richly-built metropolis on the continent, and its architecture ranged through more than a thousand years of varying styles, from the age of Charlemagne to that of the Third Napoleon. It was feared that the storm of fire which had enveloped her walls would at length burst within the armed circle, and destroy monuments which could never be restored. To some extent, the havoc did penetrate inwards; but, happily, it was stayed before spreading far, and not a shell exploded through the grey roof of Notre Dame, or in the dim old cloisters of S. Germain l'Auxerrois. Paris is essentially a city of architecture, of palaces, churches, galleries, bridges, columns, triumphal arches, and fountains—the last not such as are flocked about in London by little boys and girls during the dog-days, but lofty masses of marble and bronze splendid with sculpture. The stranger, indeed, who visits it for the sake of studying—and the study is most useful—the difference between this former pride of France and the other great cities of Europe—London especially—almost wonders whence these French designers and stone-masons derived their courage and their genius. A careful perusal, so to speak, of the streets and squares and public edifices will inform him. In the Place Vendome, with its quadrangle of towering and stately houses, he will read the magnificence of the Fourteenth Louis; in the Rue de Rivoli, that of the First Napoleon; in the new Louvre, that of the Third; in the Tuileries, that of the First Francis; mingled with that of all succeeding sovereigns. The Palais Royal speaks of Richelieu, exactly as Hampton Court does of Wolsey; the Luxemburg of the Medicis and Italian pomp; the Tournalle of the bygone tournament days; and the Hotel of the Rohans—whose proud motto was, "I am not a king, I scorn to be a prince; I am a Rohan"—of that antique chivalry which has for ever passed away. But it is not precisely in these directions that we would, for a moment, glance. It is rather towards the works of the second—for, of course, he was only the second—Emperor of the Bonaparte dynasty. No monarch—not even the classic Augustus—ever bestowed so much thought and care upon the architectural embellishment of a great city. His junction of the Louvre with the Tuileries created a structure unparalled for extent and spendour; but the idea dated so far back as the reign of Henry IV. Napoleon, however, was first to take the work in hand, preserving, though enriching, the original style of ornament, upon which he employed a hundred and fifty artists, and sketching with his own pencil one of the noblest staircases in existence. The dimensions of this truly imperial pile, visible from every part of Paris, and commanding every part of it, may be imagined from the fact that, in one of those louvre-roofed towers, and the low range of buildings adjacent, sleep every night a thousand soldiers; and yet this is only an odd corner of the whole. Taking a general view, however, and comparing our own metropolis with that of France, we attain to a better notion of the French advance in these matters than by gazing at those glorious works of the architect, which we can never hope to emulate. A point of primal importance, well comprehended by the Third Napoleon, was the difficult task of opening new streets and communications through the quarters where the population were huddled together like bees in a hive, but with far less of order and regularity. It would not be easy to say whether old Paris or old London stood most in need of this reform; for if London required a free passage of air supplied, in consequence of the immensity of ground over which it extended, Paris required it from her habit of piling up floor upon floor, from eight to twelve stories high, rendering the streets cavernous and the lower apartments little better than so many sepulchres. There is much similarity between the position of the two cities. Both stretch along the banks of a river, and the chief communication is, consequently lateral to the water. Our streets in the transverse direction have been greatly improved; but in the lateral lines of traffic we have been scarcely able to cope with obstacles and expense. Thus, our great arteries, such as the Strand, Ludgate-hill, and Cheapside, notwithstanding the Thames Embankment, are almost impassable when the traffic is at its full. Through the instrumentality of Louis Philippe and Louis Napoleon the quays of the Seine have been opened, on both its banks, right through Paris. The river, in fact, is the main air-way of the French Capital. Yet this is not all. There stood, when the Emperor ascended his throne, in the quarter between the Rues S. Denis and S. Martin, a network of narrow lanes which it was difficult for even a foot passenger to thread. The imperial architect, with his Boulevard de Strasbourg, cut through the maze from end to end, and opened a superb prospect where before there had only been filth, dilapidation, and squalor. When, however, we speak of architecture in connection with the self-bewailing city, we do not restrict the term to the mere elevations, façades, and profiles of the majestic metropolis. We would even include within the phrase sewerage, water-supply, and fortifications—three subjects well worthy to be touched upon just now. It is often said that we, with our main-drainage system, have inaugurated a new era. Nothing could be more untrue. With the ancients the aqueducts and cloacæ are as old as the walls of their proudest towers, and more durable. The further we travel south the greater is the desire for water. Paris, years ago, before we had thought of them, enjoyed these characteristics of latitudes less northern than our own—public fountains. She had two thousand of them so far back as fourteen years ago; but her abundance was in the streets and not in the houses. So with her sewage. Down to a very recent period the only sewers of nineteen twentieths of Paris ran uncovered through the middle of the street. All this, or nearly all this, is now changed, and a wonderful organisation has been built below, upon a principle which the French describe as canalisation. An idea of this is given in a regulation under the hand of Baron Haussmann, late Prefect of the Seine:—"Every principal line of sewer shall be provided with a gallery, having a railroad. Galleries of less dimensions, but equally furnished with rails, and permitting the circulation of waggons and workmen, will be established in the secondary sewers. A gallery of small section, large enough for the passage of barrows, will go round the foundation of each block of houses on every side." But we will ascend again, and glance abroad at architectural Paris as represented by her monuments and streets. It may be admitted that most of the splendour is comparatively new. There are no trophies of magnificent civic aristocracies, such as are found in Italy; none of the higher order of burgher life and independence, such as are found in the Netherlands; no sacred corners, like Westminster Abbey, with great histories written on their walls. The Sainte Chapelle is perfect in its way, but Notre Dame is very poor, considering that it sprang from that century of glories, the Fourteenth. Paris wants steeples and pinnacle, and its churches appear to have been erected in a spirit half-Pagan and half-Puritan. Voltaire once compared it to "the most miserable village in Westphalia." Alfieri could find little to descant upon except the poverty of its public structures. There was no pavement until the royal stomach of Philip Augustus was turned by the odours produced by a waggon ploughing up the mud; yet now, we behold, notwithstanding bombardments and havoc, the stateliest city out of all comparison in Europe. The genius which wrought the change was the genius of architecture. We except the University and the Hotel de Cluny—the latter an exquisite Gothic specimen; and we regret the palaces of the bygone times, with their cylindrical towers and their extinguisher roofs, which must have been so picturesque. The tower of Catherine de Medici's Hotel, still standing alone, suggests what "the finest private dwelling of its age" was when entire. Regrets, however, are soon lost amid realities. New Paris, the centre of a brilliant kingdom, with its great lines of railway communication, has outgrown the city of even our memory ten times more rapidly than it outgrew the old boundary of the Romans in their palisaded island. The Deux Centre has been cleared out; whole quarters of the city of Philip le Bel have been swept away; and Paris gives, in her beauty and richness of perspective, a lesson to the world. What, however, of that other architecture to which we have alluded—the architecture which converted her into the hugest fortress that Europe ever saw, and yet was powerless to resist a besieger? Not much need be said about it. The results of the war have proved that it was a gigantic mistake, though the works were admirably constructed on the modern principle. Nobody, indeed, was ever awed by their aspect. The unmilitary tourist, who expected to see frowning battlements and majestic towers, saw only verdant slopes and grassy mounds of slight elevation; still, the walls, though sunk, were lofty; the moats surpassed all anticipations. Of course, since the invention of cannon, the embattled towers of the middle ages have fallen into disuse; they are now either restored, or imitated, or left to moulder in ruins as objects of picturesque attraction. Even when gunnery was in its infancy, and the details of its cumbrous machinery were of the rudest description, it was often enough to place a few pieces of ordnance in battery against a walled town to secure its surrender, so sure were the thickest walls to crumble when under the shock of their fire. Still, it was for a long time necessary to have high walls; since, but for such an obstacle, an enterprising besieger might avail himself of the darkness of night to penetrate at some unguarded point; but it became a problem how to screen them from the artillery of the foe, until at least, he arrived quite close. Modern science solved the problem, and ramparts became earthworks, faced with masonry, with parapets 20ft. thick. Paris was thus defended; but the ancient French maxim held good "place assiegée, place prise"; a town attacked is a town taken. We may leave the fortifications; they have been turned against their mother. Returning to the architectural aspect of Paris at the present day, we have to note a peculiar element in the building and decoration of private dwellings by people who have not long known what it is to be wealthy. We frequently refer to Parisian taste, but it is not uniformly shown in the instruction given by fortunate speculators to their architects. A keen eye, roving over the new city, white as the Alban capital in ages gone, will detect in colonades, corridors, and balustraded recesses—very pretty in their way—a little bit of Doric, a little Ionic—the French are not, as a rule, fond of the Corinthian order—a tint from Persia or Assyria, an Etruscan group, a panelling of alabaster surmounted by the most beautiful of all ornamental devices—excepting the honeysuckle, or alternate bud and flower—the guilloche, and a plafond in the style of Louis XV.—all naughtiness, nakedness and riot. Therefore, glittering as the general effect may be Paris is not, in the strict sense of the term, a city architecturally-built; it belongs to a country which never had a "school" of its own, but revels in an eclectic luxury, mosaic-ing itself from all lands and all eras—now pilgrimaging to the lone white columns on Egæan headlands—now adapting from the mystic interior of Amron or Ebn Touloun. For all this the whole civilized world must rejoice that the city of beauty and grace was not doomed to perish beneath the Gothic fire.

ARCHITECTURAL ASSOCIATION.

At the ordinary general meeting on Friday evening last, Mr. T. H. Watson, president, occupied the chair. Several new members having been elected, the best thanks of the Association were tendered to Lieut.-Colonel Scott for his kindness in permitting a number of the members to visit the new Science Schools and the new courts at the South Kensington Museum, and to Mr. Gilbert R. Redgrave, for kindly conducting the members over the works. It was also announced that the particulars of the prizes offered by Mr. Edward W. Godwin would shortly be published. Mr. Watson informed the meeting that Professor T. Hayter Lewis had been requested to act on the Committee for Architecture in the International Exhibition of 1871. He had at first declined, on account of ill-health, but having now recovered, he had on the request being repeated, consented to act.

Mr. F. J. Francis, F.R.I.B.A., then read the following paper :—

NOTES ON THE RECENT WORKS AT ALL-HALLOWS' CHURCH, LOMBARD-STREET, WITH REMARKS ON SIR CHRISTOPHER WREN'S CHURCHES.

I purpose to confine myself first to a brief discription of All Hallows', Lombard-street, following it up by some remarks upon the leading principles of design observable in the more important of Wren's London churches, and then contrasting them with the general principles governing the design of buildings of the Pointed style. But, first of all, we ought to pay a passing tribute to the manifold gifts which were centred in this remarkable man. Without any disparagement to the many excellent men of proved ability whose architectural works are an honour to the present age, it must be admitted that few could compete with Sir Christopher Wren, whose youth was passed in abstruse and philosophical research, and who was celebrated for his scientific attainments before he set his mark on his generation by his architectural genius. In his childhood of weak bodily constitution, he had a most precocious mind, and it displayed itself not in poetic fancy and feeling, but in the abstruser paths of science and philosophy. What will the young architects whom I see before me say when I tell them that at the age of thirteen it is recorded of Wren that he had invented an astronomical instrument, a pneumatic engine, and other triumphs of mechanical skill ? No wonder that with these credentials, presenting himself at our ancient seat of learning, the University of Oxford, he attracted the notice of the Savilian Professor of Astronomy, and that at the age of twenty-one he was elected a Fellow of All Souls' College. At the age of twenty-four he was known to the learned of all Europe by his various theories and inventions; but his previous pursuits in no way prepared the world for that efflorescence of architectural genius by the results of which his name is now chiefly remembered. And surely it says something for the elevating nature of our art that, having traversed the sublime mysteries of astronomy, mathematics, and scientific mechanics, Wren should have found a fitting field for his far-reaching intellect in the study and practice of architecture. He was hardly aware of the mine of mental wealth which laid unwrought within him till the opportunity occurred for its exercise. Step by step his majestic views unfolded themselves, and the explanation is afforded by that true inscription placed beneath the statue of Newton in the ante-chapel of Trinity College, Cambridge, which speaks of him, as of Sir Christopher, as one *Qui genus humanum ingenio superavit* (Who in understanding excelleth the human race ?). We shall hereafter venture to estimate, though diffidently, the real merit of design pervading his ecclesiastical structures ; but it will be appropriate, as carrying out the object of this paper, to pass on to a description of one of the many churches which, after the Great Fire of London, sprang up under the direction of this Surveyor General of Public Buildings.

All Hallows', Lombard-street, was erected about the year 1674. It stands on the site of an earlier church. The plan, as in the majority of Wren's churches, is very simple—a parallelogram 72ft. long, 52ft. wide, and 33ft. high. A massive tower, possessing no distinctive merit, stands at the south-west angle, in a line with which, northward, is a vestibule or ante-chapel with a groined ceiling springing from a detached pier—certainly not the least effective portion of the interior. At the east-end is a chancel recess with a segmental roof, and about 12ft. deep ; and the east wall is adorned with a highly enriched screen of the Composite order, rising to a height of nearly 30ft, with twisted and enriched shafts, and with deeply sunk panels and pedimented heads—the details somewhat incongruous, yet characteristic of Sir Christopher Wren's decorative manner. At the west end are two Corinthian porches of elaborate design, upon which the architect appears to have bestowed unusual care. The ceiling is flat, with a cove on the four sides. The north and south windows (which are large, measuring 16ft. by 6ft.) are carried up to a height requiring the introduction of groins to combine with the design of the ceiling. The pulpit and pewing were very characteristic, not of Wren only, but of the state of the Church of England at that period. The former is highly enriched, remarkably well placed for sound, and surmounted by a massive sounding-board. Altogether we felt it would be sacrilege to touch this part of the interior, and beyond lowering the shafts to assimilate the pulpit with the reduced height of the seats, this detail remains as Sir Christopher Wren left it. The pew-framing had considerable foliated enrichment, all of which has been preserved, but its outline was stiff and formal. The backs were high and upright, the doors were furnished with locks, and everything seemed calculated for an exclusive, and I may add, a somnolent worship. A range of pews was placed against the north and south walls, somewhat elevated above the aisles, and enabling the occupants to command, by a sort of crossfire, the countenances of their fellow-worshippers, more reverently placed facing the east. These we had no hesitation in removing, appropriating the area of the destroyed seats to the formation of suitable passages of entrance to the new benches. No doubt when the church was erected there was a fair margin of ground round its sacred precincts. At the south was its churchyard, opening into Lombard-street. Its east-end faced Gracechurch-street, while its west-end abutted upon a quiet passage away from the din of City traffic. But its present aspect is far different. The requirements of commercial activity, joined with ecclesiastical supineness, or perhaps rapacity, have so blocked the surrounding area by secular buildings that the church's existence is hardly guessed by the thousands who day by day visit the charmed centre of City activity within which it stands. Public dining-rooms now abut both upon its eastern and western walls. Upon part of the churchyard stands a building where trousers are sold at thirteen shillings per pair, and a row of commercial chambers casts its shadows upon the northern side at a distance of about 8ft. I ought to mention that Sir C. Wren's interior was not suffered to remain entirely untouched. A gallery, certainly not part of the original structure, stretched across the western end ; it contained the organ and concealed from view the west window, while the intrusion of the tower into the south-west angle of the building was supported by a corresponding sham projection on the north, where was formed a very inconvenient room, approached by a cumbrous staircase concealing the groining and ruining the effect of the interior. Under the operation of the Union of Benefices Act, the parish of All Hallows' was united with S. Benet's, Gracechurch-street and S. Leonard's, Eastcheap. S. Benet's Church, another of the productions of Wren, was taken down, the site was sold, and four large shops now stand on part of its site. With the money thus obtained (I believe about £22,000), it was provided that a church should be built and endowed in some destitute parish at the east-end of London, and also that, at a cost of £4,000, All Hallows' church should be repaired, restored, and decorated, so as to form a fitting church for the use of the three united parishes. The works have been carried out successfully, and the church, after having been for about nine months in the hands of the builders, was opened a few weeks since by the Bishop of London, in presence of the Lord Mayor and Sheriffs. The constructive features of Sir C. Wren's architecture have been carefully preserved, and especially, I may say, we set our face against so organic an interference with the simplicity of Wren's windows as would result from the introduction of central dividing columns and arches. I cannot deny the tastelessness observable in too many of these large windows ; but they were emphatically the manner of the master, and in my opinion their character should remain unaltered. The west galleries have been removed, as also the room at the north-west corner, throwing open the fine vestibule, the west window, the detached pilaster, and the groined ceiling. The old pewing has been replaced by low oak benches, with bench ends of a design suitable to the rest of the wood-work. All the old wood carving has been worked in where practicable. The seats, with the exception of the choir stalls, uniformly face the east. The organ stands on the floor of the church at the south-east corner. The case is remarkable for its beauty of design and elaborate enrichment. In its present position these features are much better appreciated than when the instrument was placed in the gallery recess. The pavement throughout has been laid with encaustic tiles, the pattern increasing in variety and the number of figured tiles as the east is approached. Within the altar space there is a free sprinkling of glazed tiles. The altar rail is of brass, with foliated standards and a telescope slide. The wall and ceiling decorations are very effective in character. On the ceiling the corner medallions represent the Evangelists, the central subject being a figure of Our Lord in Glory, seated on His throne. The more salient parts of the cornice mouldings are brought out in gold and colour. The faces of the groins under the main ceiling have foliated enrichments, with medallions representing at the east and west ends the four Great Prophets. The side medallions contain representations of patriarchs and kings. Arabesque decoration is carried round the window arches and above the wood panelling on either side of the church. There is an unusual amount of stained glass, and of a very meritorious character, executed by Mr. Alexander Gibbs, by whom also the wall and ceiling decorations have been carried out. The window at the north side of the chancel represents the Marriage of Cana in Galilee. On the south side of the church, commencing from the organ, the subjects of the four windows are—(1) Christ sitting in the Temple ; (2) Christ Healing the Blind ; (3) the Good Samaritan ; and (4) the Three Marys at the Sepulchre. The west window contains a striking representation of the Crucifixion. On the north side, commencing from the vestry, the subjects of four windows are—(1) the Wise Men's Offering ; (2) Christ raising the Widow's Son ; (3) S. Peter Walking on the Sea ; and (4) the Entombment. Considerable pains have been taken with the decoration of the reredos, which, as I have already observed, is very handsome and highly characteristic. The principal lines have been relieved with gold; as also the shafts and capitals ; and the monotony of the dark colour of the wood has been further destroyed by painting out the Ten Commandments, and substituting in the central panels over the altar two pictures in oils, one representing Christ crowned with Thorns, and the other Christ bearing the Cross. Sacramental tents occupy the side panels, and on the return sides of the panelling, north and south, are painted on a light ground the Creed, the Lord's Prayer, and the Ten Commandments. I should like again to call attention to the fine original porches at the western end, and to the peculiar gateway formerly placed at the entrance of the passage out of Lombard-street, now fixed, on account of its archæological interest, in the vestibule under the tower.

I need not further occupy your time in detailed description of this church, but it remains that I should supplement what I have said by some remarks upon the main features of Wren's churches, and what appears to constitute at once their special strength and weakness. The noble cathedral of S. Paul's, itself worthy of a separate and distinct paper, must not be passed without remark. It was curious that at the time of the birth of Wren, Bernini was employed in the completion of S. Peter's at Rome, the great rival of S. Paul's in skilful construction and mechanical execution. Wren accomplished S. Paul's alone in the space of about thirty-five years, while S. Peter's was the work of twenty architects, supported by the treasure of the Christian world, and by the protection and under the pontificate of nineteen successive Popes. Whether the original design of the architect of S. Paul's would have been more effective in its result than the present structure, it is not for me to determine; but in one respect the original conception falls short of the realised design, inasmuch as in the former there is no space for a collected congregation except in the circular area beneath the dome, which could not be fitted up for such purpose without being further enclosed, whereby also in other respects the grandeur of the *ensemble*, as it shows itself in the plan, would have been greatly impaired. The first stone of the cathedral was laid in 1675, and the last stone in the summit of the lantern was laid by the architect's son in 1710. Taken altogether, as has been justly observed, "The present S. Paul's is a truly glorious work, its cupola matchless in beauty, satisfying the judgment, if not entrancing the taste of the spectator." Yet all-noble though it be, the fabric will not bear to be scrutinised in the spirit of captious criticism, and of late years serious attempts have been made to derogate from its excellence. I fear it cannot be denied that the real form and construction of the building are masked, the upper order of the side elevations being merely a screen concealing the buttresses and clerestory windows of the nave, and that the same is in a great measure the case with the cupola or dome, the external dome being much loftier than the inner one. All this may be true, and yet the merit of the wonderful structure remains almost without abatement. For external congruity of design, and for grandeur and solemnity of internal effect, it takes the very highest rank among the Roman models at the period of or subsequent to the Reformation. Still it must be admitted that on entering this noble pile—and of course in a much greater degree in visiting the minor churches of this great master—there is a feeling of intense disappointment. How little has been done in the Metropolitan Cathedral to wake into life the dry bones of that magnificent though melancholy shrine? With how sparing a hand have the sister art of painting, the refined forms of mural decoration, and the glowing pageantry of stained glass been introduced to relieve the interior from its chill and depressing baldness? It remains a monument indeed of Classic accuracy and mathematical ingenuity of construction, but hardly a living temple, instinct with the furtherance of the religious element, and fraught with reverential associations.

(To be concluded in our next.)

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NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 126.)

PLATE 23. — QUARTER-CIRCLE STAIRS HAVING FIVE WINDERS AND LANDING WITH ONE SQUARE STEP.

FIGURE 1 shows the ground plan. The rail on right going up stairs. The tangents form the right angle A B C.

Fig. 2 shows tangents, winders, and square steps unfolded.

The under side of level rail on the landing is raised to suit long baluster on square step.

The wreath over winders has unequal pitches: its upper part being T N; the lower, T L; its height, R L.

To find a direction for ordinate. Extend L T, cutting at P, which gives P R. Transfer this to extended side of square, Fig. 3, where corresponding letters are shown.

Let square equal that on plan. Draw ordinate. Make seat square with it. Let height equal that on right. Then draw pitch and construct mould as usual.

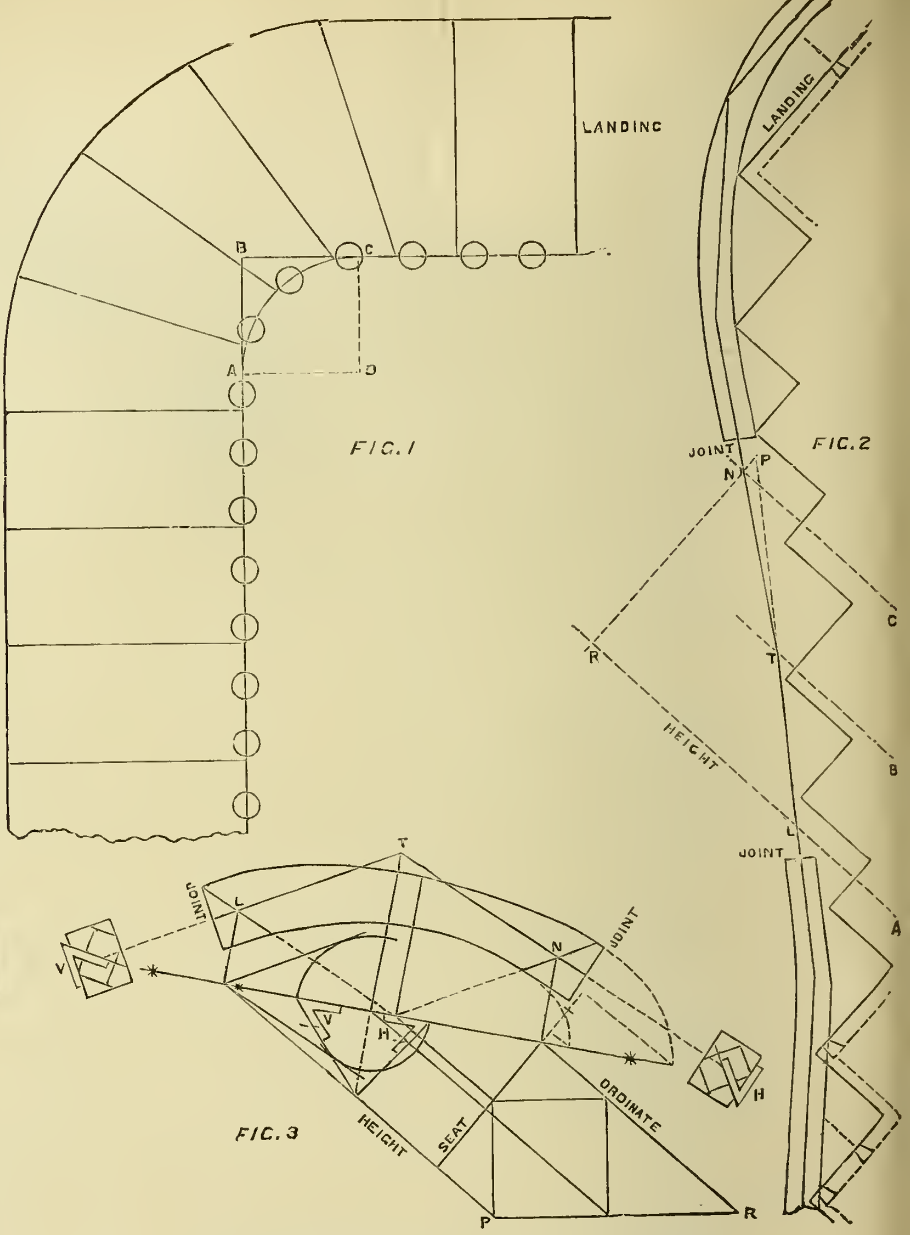
Tangents L, T, N, to be correct, must equal corresponding letters on pitch, Fig. 2.

Square sections show joints.

Stock of bevel H and that of V are on the surface of plank. The blades, in all cases, pass through half the width and half the thickness of rail. In other words, the tangents on mould being square across the joints, then half the thickness of plank marked gives a centre through which the bevels pass.

The accuracy of work depends entirely on the proper application of bevels, and the manner in which the joints are made. An error in either renders it impossible to have a wreath stand correctly over its plan. This has been already remarked, and should be constantly kept in mind.

Nearly all the drawings are to a scale of inch and half to the foot, which gives the opportunity of clearly showing the meaning and intention of every line, particular pains having been taken, to make each plate its own interpreter, not depending solely on letter-press description.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXIII.

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LIMES AND CEMENTS.

LIEUT.-COL. SCOTT, R.E., gave the fourth, and concluding lecture of this series, on Monday evening last, at the rooms of the Architectural Association. Having recapitulated the subjects of the three previous lectures, Col. Scott began by pointing out in what way the suitability or otherwise of limestones for making limes and cements for various purposes, could be tested, so that if any member present had to carry out a work in a foreign country in which there were no manufacturers of lime he would be able to select materials fit for his purpose, assuming that such an one had a sufficient knowledge of mineralogy to be able to distinguish a limestone from any other stone. If the application of acid to a limestone entirely dissolved it and left no residue, the material, when burnt, would only give a pure lime, most unfitted for building purposes; if, on the other hand, it left a residuum of very fine clay, quite impalpable to the touch, it was probably capable of being manufactured into a more or less hydraulic lime. Muriatic acid or nitric acid might be used, but muriatic acid was preferable on the score of doing less damage to one's clothes than nitric acid. Sulphuric acid might also be used, but this test was more difficult of application and gave less satisfactory results. Muriatic acid was, all things considered, the best for this purpose. When the stone was burnt and it was desired to know what results a mortar made from it would give, a good plan was to take a small quantity of it in a pounded state, and to add muriatic acid to it. The acid dissolved out all the iron, alumina, and lime it contained, but left the silex as a somewhat gelatinous mass. By means of filtration the silex may be separated from the other matters which are in solution. In the clear-filtered solution there might be present chloride of iron, chloride of aluminium, chloride of calcium, a little chloride of magnesium, chlorides of the alkalies, and perhaps a little manganese. As soon as the liquid has passed away from the gelatinous silex which remains on the filter, the residuum, after being well washed with a washing-bottle, may be dried, calcined in a platinum crucible, weighed, and estimated. The next step is to obtain a substance which will lay hold of the chlorides of iron and alumina in solution. The addition of ammonia effects this by the neutralisation of the acid, and a somewhat dense precipitate is thrown down. By means of another filtering operation, the iron and alumina can be separated, and another clear solution will be obtained, consisting of chloride of calcium, and, perhaps, chloride of magnesium. If magnesia is present in a limestone it will give a better hydraulic lime than that obtained from pure limestones. The American hydraulic limes contain a large quantity of magnesia, but the lecturer was not aware that any of the hydraulic limes of this country contained that substance in any great degree. By treating the clear fluid obtained from the second filtration with oxalate of ammonia, the lime it contained was thrown down as a white precipitate, which might in turn be separated by a third filtering operation and estimated as before. In making an analysis of an hydraulic limestone, the best method is to separate first the clay from it, and then the iron and alumina. Indeed, this is really all that is practically necessary. Supposing that the silex, iron, and alumina were large in quantity, such a limestone, though unfitted for use by itself, could be used very well as a puzzolana, which, if very intimately mixed with a pure lime, will impart hydraulic properties to it. The puzzolanas imported from Italy some years back for this purpose, and the trass or terras from Holland, were rich in silex, iron, alumina, and magnesia; but we in this country might have done equally well, or better, if we had made use of many of the beds of stone, shales, &c., of this country, which, if treated properly, would have given better puzzolanas than those imported at great expense from abroad. The lecturer next spoke of the lax way in which limes and mortars were specified by architects and others. He said that a perusal of the specifications which had been published of some of the great works of this country would show that some particular lime had been specified, as, for instance, "Halling or Merstham lime," as if both these varieties were identical; "lias lime," too, was frequently specified, without naming the locality from which it should come. He observed that there were so many gradations of quality of each denomination or variety of lime, that he thought it would be best for architects (if they could only be persuaded to do so) to specify the percentage of silica they required in a lime rather than the particular district from which the lime was to be procured; the builder could then select the quarry accordingly. Colonel Scott said that he tried many years ago to induce the War Office to adopt this plan of specifying lime, and was so far successful that in one or two works the principle was acted upon; but he believed that it had now fallen into disuse. Speaking of the action of the atmosphere on limes, the lecturer said that the injurious effect of the exposure of limes to the air was very much over-rated. Such exposure turned it into a hydrate of lime, but it had in reality undergone very little change, except that it would not heat quite so rapidly when slaked, and therefore its power of throwing abroad hard particles was lessened. He remarked that the atmosphere was only doing gradually that which would eventually be done when the lime was slaked previous to its use for mortar. After a time the water absorbed by the lime, however, began to be expelled by the carbonic acid gas of the atmosphere, though this was a slow process, owing to the small amount of carbonic acid present in the air. In buying lime in bags it behoved the purchaser to be quite certain that the lime had not been exposed for a long time to the atmosphere, for if it had he would of course get less for his money, owing to its expansion in bulk by the action of the moisture of the air, which was not so easy of detection in the bag as in the lump. If pure chalk lime was exposed to the air for fourteen days, and the air allowed to attack it freely, Pasley found that while it increased 8 per cent. in weight it increased 44 per cent. in volume; after forty-two day's exposure it increased 15 per cent. in weight, and 101 per cent. in volume. If it is wished to ascertain the quantity of moisture present in any specimen of lime, it is done readily and simply by taking a glass tube, putting a little lime into the bottom, and exposing it to a red heat, when the water would easily be driven off into a tube containing pieces of chloride of calcium, which would absorb the water. By weighing this latter tube before and after the operation the quantity of water is readily determined. But a more practical, if not so exact a method, was to add a little acid to the lime, and to observe whether the effervescence was very violent or not after stirring it round. Weight, the lecturer observed, is not much of a test for limes, though it was much used as a test for Portland cement; but weight was not really a test for all cements—it was not a reliable test for Roman, Medina, Atkinson's, or any of the quick-setting cements. However, there was a good test for these very easy of application, viz., merely mixing a little of the cement with water, and observing whether or not it set both quickly and hardly. But such cements should not be condemned too hastily, as the burning of them, particularly in the case of Roman cement, required to be done to a very great nicety; and it might happen, without any great amount of carelessness on the part of the manufacturer, that the material might answer fairly well in practice, though apparently sluggish in taking its set. It was constantly said now that Roman cement has very much deteriorated in quality of late years, and it was commonly supposed to be very much adulterated. Now Colonel Scott said that he had examined two or three hundred specimens of Roman cement, and had never found one which might be said to be adulterated. Very frequently it got exposed to the action of the atmosphere, and so got injured in that way. He thought that Roman cement is now just as good as ever it was, but people, from the use of Portland cement, expected too great results from Roman cement. The lecturer then proceeded to describe the manufacture of Portland cement, after which he touched upon some of the points to be borne in mind by the purchaser of that article. He said that because it contracted in bulk the more it was burnt, if it was bought under-burnt the buyer was of course getting less for his money than he would were it burnt to the requisite degree. Engineers knew this very well, and therefore always bought their cement by weight. It was against the manufacturer's interest to burn it to too hard and flinty a state, for in that condition it caused great wear and tear of his grinding machinery. Again, if the burning was not carried very far he saved in fuel. There were, therefore, three reasons why, unless cement was bought by weight, the liability was incurred of obtaining an inferior article. Referring to the test of strength for Portland cement, the lecturer said that the manufacturer might arrive at strength in one or two ways. In proportion as it was reduced to a fine state of division by grinding a better result was obtained. Many manufacturers after the material is ground do not "bag" it at once, but place it in bins for a time, and the bags are subsequently filled from the contents of these bins after they have been thoroughly admixed. By this means the under-burnt limey particles become air-slaked, and the injury they might do to the material is avoided. Portland cement, in fact, is improved rather than otherwise by keeping and exposure to the air. Perfect manipulation and admixture of the constituents will give greater strength. There was another, but a very dangerous way, in which strength could be arrived at, and that consisted in reducing the quantity of clay. The effect of this might be got over in some measure by exposure to the atmosphere; but where the quantity of clay was very small the Portland cement would always be a very treacherous material. The lecturer said he had known specimens of Portland cement which contained no more than 18 per cent. of silex to set very well at first, and to last well for some time, but which eventually played great pranks, and occasioned many serious accidents. He thought that instead of looking for such a very high test of strength for Portland cement he would rather take a cement of less apparent strength but containing more silica. The lecturer next proceeded to speak of the mixing of limes and cements for use, and the proportions of sand best adapted for different varieties of limes, as dwelt on at great length in the previous lecture. In conclusion, Col. Scott insisted upon the necessity, if good work was desired, of using wet bricks and stiff mortar, and strongly condemned the practice of "grouting." He said a French architect, M. Vicat, gives the English credit for their bad mortar for the following reason, that our builders for the most part have in view only the extent of a 99 years' lease, and so proportion their various materials that the whole structure shall fail together at the expiration of the 99th year.

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* This series of articles is a reproduction of ROBERT RIDDELL's work on the subject, published in Philadelphia, and by Trübner and Co., London.

Mr. R. PHENE SPIERS, in proposing a vote of thanks to Lieut.-Col. Scott, expressed the great indebtedness of the Association to him for delivering such a valuable course, and remarked that the lecturer had studied the question with that peculiar energy which seemed to characterise the engineering profession in considering the subject of materials.

The motion was seconded by Mr. T. Marr Johnson, and supported by Mr. Quilter, and unanimously carried.

Col. SCOTT, in acknowledging the compliment, said that probably the reason why the Royal Engineers studied the nature of materials more carefully than architects was that many of their structures were built to be fired at, but architects fortunately had not to build with such an object in view (laughter.)

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. G. G. ZERFFI delivered the twentieth lecture of his course on the above subject, in the lecture theatre, South Kensington Museum, on Tuesday afternoon last. Continuing the list of the works of Alkemenes, the lecturer said that a head of Juno in the Villa Ludovisi, though thought to be only a copy, was one of the loveliest compositions. It united stern dignity with the inexpressible grace of womanly beauty; imperishable youth bloomed on the delicately-rounded cheeks, and the whole face expressed a spiritualised divine love. Both this artist and Polykletus had not represented Juno merely as a beautiful woman. She had been with them the symbol of the holiest moral force working in humanity, and the emblem of the only possible basis of human society—marriage. The artists of ancient Greece, like those of modern times on the continent, had had schools. Here the younger artists had been allowed to work and reap the benefit of occasional advice from the master The school of Phidias had produced Agozakritos, whose works had often been mistaken for those of the great artist himself, Kolates, Pœonios, and many others. Polykletus had had eighteen pupils, amongst whom was Naukides, who had sculptured a disc-thrower. The best copy of this statue was in the Vatican at Rome. The figure held the disc in the left hand, on the point of transferring it to the right, and then throwing it. Thus two prospective movements had to be pourtrayed. The head was, undeniably, superior to that of the similar statue by Myron (which represented one movement only), but the expression of the action was less characteristic. The most important monument of this period, and of the school of Argolis, was the frieze of a temple of Apollo, found in 1812 at Bassæ, and now in the British Museum. It represented a combat between Kentaurs and Amazons. Victory and defeat were expressed in striking groups. The composition was realistic, and passion predominated—the nude executed with exquisite truthfulness, but rather heavy, and the movements too sudden and violent. The great influence the state of the country in which an artist lives had on his works could be traced in this production. At this time Greece had been plunged in civil war, and her artists no longer worked with a feeling of security; the chisel trembled in their hands; they saw prophetically the downfall of their art, and the balance between beauty and morality had been lost. In considering, therefore, the third period of Greek sculpture (400-323 B.C.) we should see that in politics, in poetry, in science, and in art, a corresponding change had taken place. Simplicity and grandeur of thought had given way to sophistry and elegant writing; the idea began to be sacrificed to the form; in the place of Aristides stood Alcibiades; Sophocles had been replaced by Euripides, and Socrates succeeded by Plato. The sublime works of Phidias also had been superseded by the charming compositions of Praxiteles. To detach an isolated phenomenon in the development of the national and intellectual life of a people, therefore, would lead us only to a knowledge of single effects, but never to a correct appreciation of the causes that engendered them. The whole tone of society, and the very mode of thinking, had become changed in Greece. Public buildings began to be neglected, and private edifices of a costly nature had arisen. The national spirit which had aspired only for all had dwindled into individual egotism, and artists became compelled to execute works to please the fancy of the purchaser. There still remained so large an amount of vitality in Greek art that it had been even then able to elevate particular forms into general conceptions of beauty; but these forms were no longer sublime and dignified. Passion, artificial pathos, and an excited and restless expression of the mind had become more prevalent. The divine characters of Phidias had vanished, and the divinities became endowed with a certain sensuality, losing thus their spiritual character. The outer forms had become more perfect, and the deepest feelings of excited passionate humanity trembled through the stone images. Art, instead of being objective, had become subjective. The divinity of love had no longer been the generalisation of love in mankind, but the expression of that feeling in one particular form. In illustration of this, we had an Eirene (peace) with Pluto (riches) in her arms (about 370 B.C.), by Kephisodotus, the elder, who had been probably the father of Praxiteles. It was, in fact, an allegory, grown out of a desire to

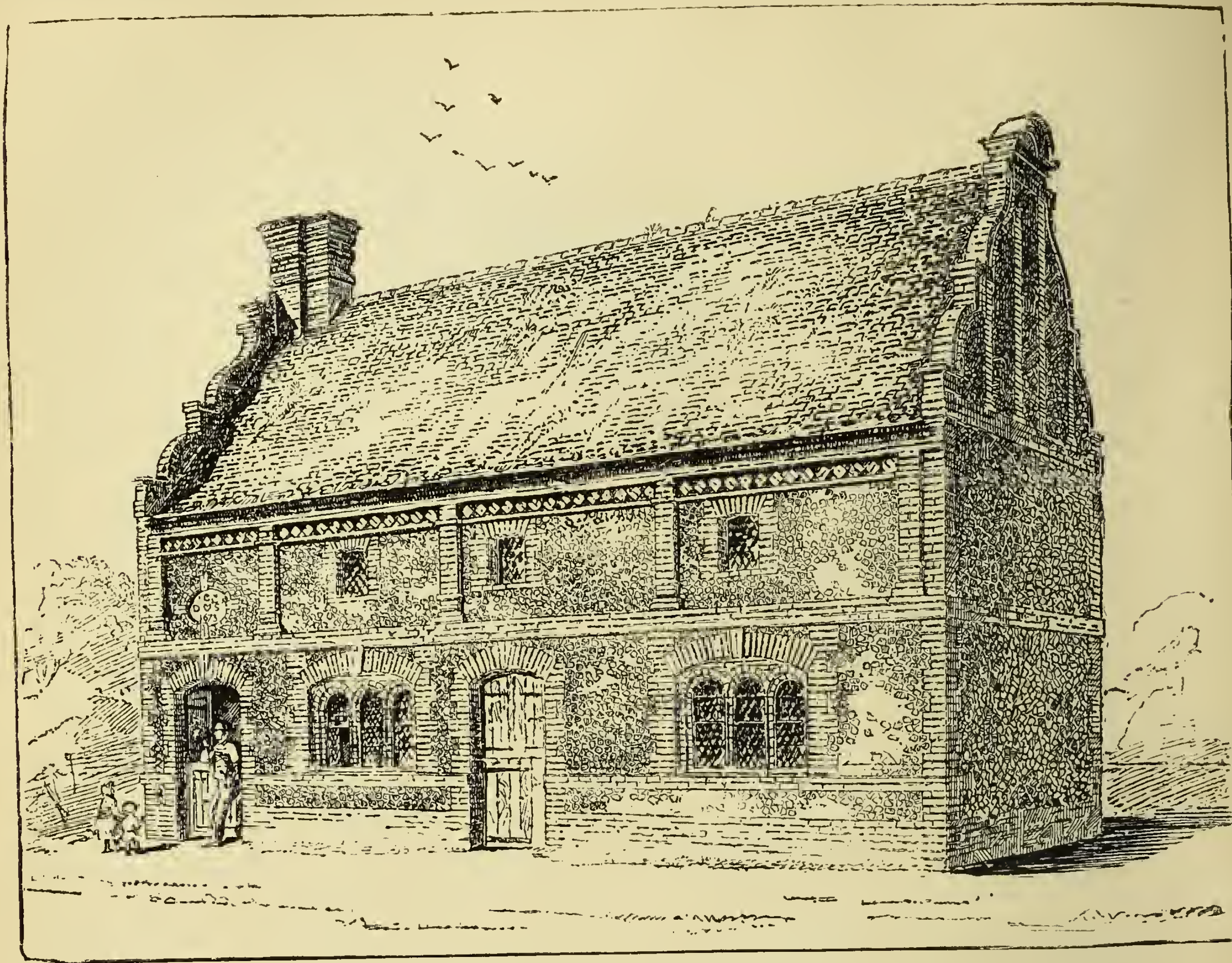

Fig. 1.—Ancient Brick and Flint Cottage at Broadstairs. (See p. 167.)

see the sanguinary contest between Greek and Greek at an end. The goddess was represented as looking down upon the amiably smiling child with motherly tenderness. The child is about to caress her chin with his right hand, whilst he holds in his left the horn of plenty. The work was full of an idealised naturalness. Next, Xenophon and Eukleides might be mentioned, who had sculptured undraped divinities. Passing, then, to Scopas, who had been born on the island of Paros, we had violent scenes of combats, which filled both sides of the temple of Athene Alea, at Tegea. The group at the back represented Achilles fighting with Telephos; that in front, the hunt of the Kalydonian boar by Herakles. Both were allegorical, and, therefore, not really artistic. No doubt allegory might, to a certain extent, be expressed in works of art, but it was not in any case desirable. The form should at once convey its meaning in striking the eye, and should not require long thought to enable the gazer to realize the object of the artist. These scenes were further calculated to inflame the passions, and art, therefore, lost its pacifying influence, and was plainly in its decline. The divinities sculptured by Scopas afforded proofs of his powerful and restless imagination, and were characteristic of the tendencies of the time. Having described the further productions of this artist, the lecturer next proceeded to those of Praxiteles, who had, he said, been born about 392 B.C. No less than fifty works, partly groups and partly single statues, he continued, were attributed to this artist, who had introduced a totally new element into sculpture. He stood to Phidias, and even to Scopas, in the same relation as Guido Reni to Michael Angelo and Raphael. Though he had created perfect models of beauty, yet this beauty was that of outer forms only; manliness, the expression of a divine thought, and the highest and purest inspiration, had been wanting. By Praxiteles all the gods and goddesses were represented as youthful. All harshness in the lines was avoided, and every idea of divine superiority in the marble form discarded. The tendency to heighten the effect of careless sensuality was to be seen even in the very position of his statues. Polykletus had made his figures rest on one foot, but Praxiteles had gone farther and made his figures lean on a support altogether separated from the body, thus materially increasing the ease of the position and creating a feeling of quiet comfort in the admirer. The various examples of the style of this artist were fully described by the lecturer, who went on to say that the refinement in art introduced by Praxiteles had been carried still further by his disciples. Amongst these, Kephisodotus the younger should be mentioned. Pliny had praised an Erotic group by him, in which the marks of the fingers had been impressed in the marble as in flesh—an objectionable naturalism. Next, we came to Lysippus, who had lived in the times of Alexander the Great. In perfect accordance with the martial spirit of the period, he had produced colossal figures of the gods. Herakles had been a favourite subject; and one erected at Tarentum was so large that the thumb was as thick as the waist of a strong man. In contrast to this large figure was a small one, scarcely 1ft. in height. It represented Herakles sitting on a rock, covered with the lion's-skin, holding a goblet in his right hand, and the club in his left. Alexander the Great always had had this with him. Portraits had been more frequently executed, Alexander being often reproduced by Lysippus. One bust was in the Louvre, and another of undoubtedly greater beauty was at Rome, in the Capitoline Museum. Art thus had taken a wider range. The genre statue had begun to interest, and the naturalistic tendency had increased. The productions of Lysippus had declined in excellence. The artist had altered the proportions of the body, especially with regard to the head, in order to give his statues a more slender appearance. No idea animated the marble, which was merely carved for the purpose of producing an effect—a sensation. Sensationalism began to rule on the one hand, and a coarse imitation of nature on the other. A description of the Laocoön (Vatican), the joint production of Agesander, Athenodorus, and Polydorus, concluded the lecture.

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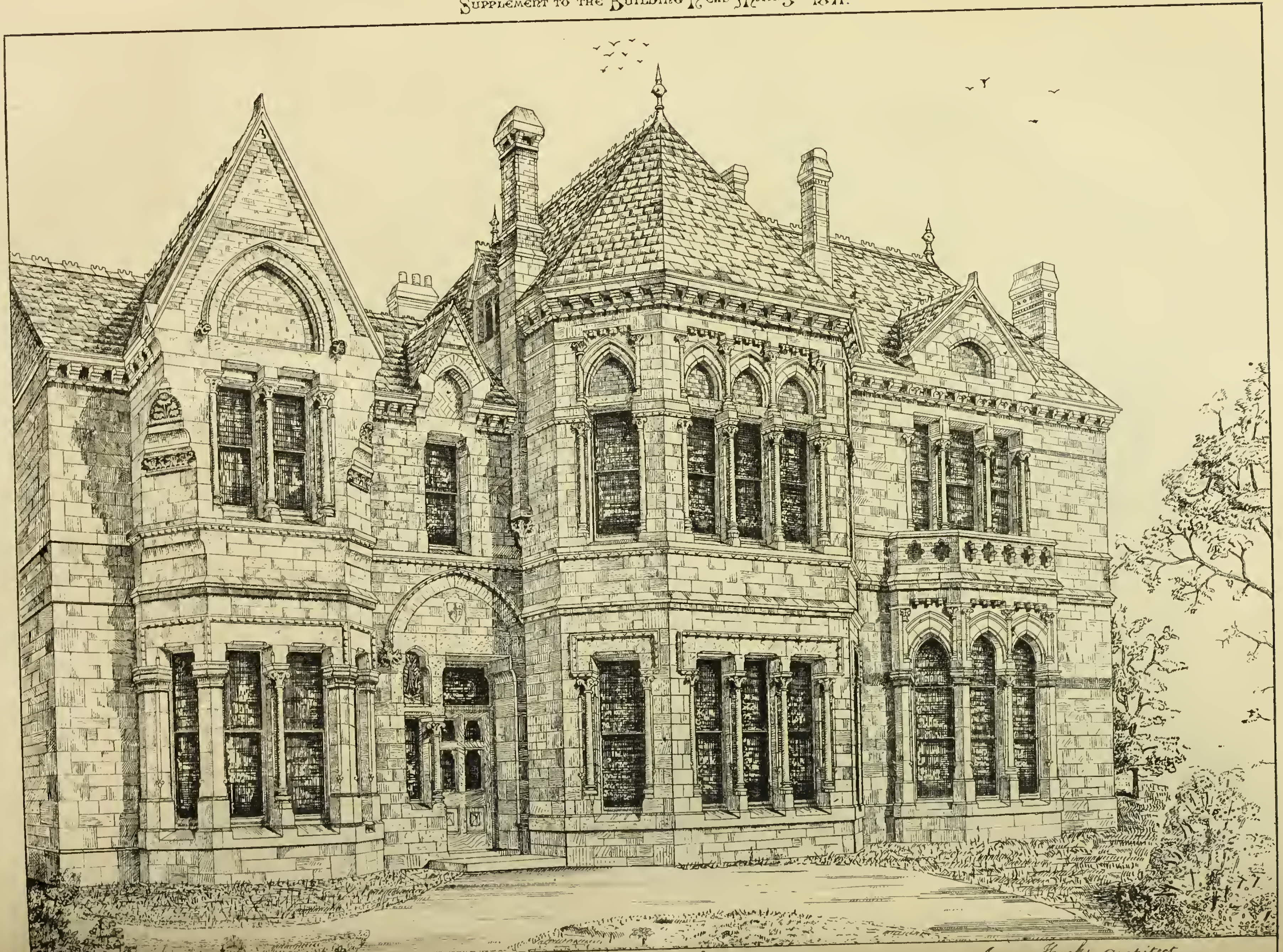
TOLVEAU HOUSE, REDRUTH, CORNWALL.

OUR illustration this week shows the residence, as altered, of Alfred Lanyon, Esq., Redruth, which is situated in the centre of the richest mining district of Cornwall. The old house was a very plain erection of 40 years ago, the rooms being small and only 9ft. 9in. in height. The portion to the left of the front door (shown in illustration) contains a private study, &c., and is old, except the bay-window, which is entirely new, and accounts for this portion of the building being lower than the rest. The upper part of the bay is corbelled out and treated in a bold manner, so as to prevent in a measure this portion of the house being dwarfed by the new, which is about 6ft. higher. The centre bay shows the breakfast-room; that to the extreme right the drawing-room; behind which is the dining-room, 28ft. by 17ft. Altogether there are about twenty-one rooms in the house.

The materials used have been granite for the sills, lintels, &c., and Alvan stone (similar to but much harder than Portland stone) for the facing, and a dark brown slate stone for the ordinary walling, all obtained within about two miles of the building. The carving has been very fairly executed in Bath stone by Mr. Harry Hems, of Exeter. The contractor was Mr. Thomas Jenkin, of Devonport. The retention of the old portion of the house rendered the treatment of the architecture extremely difficult, and caused more variations in the various details than would have been the case had the building been entirely new. The whole of the works were carried out last year under the superintendence of the architect, Mr. James Hicks, of Redruth.

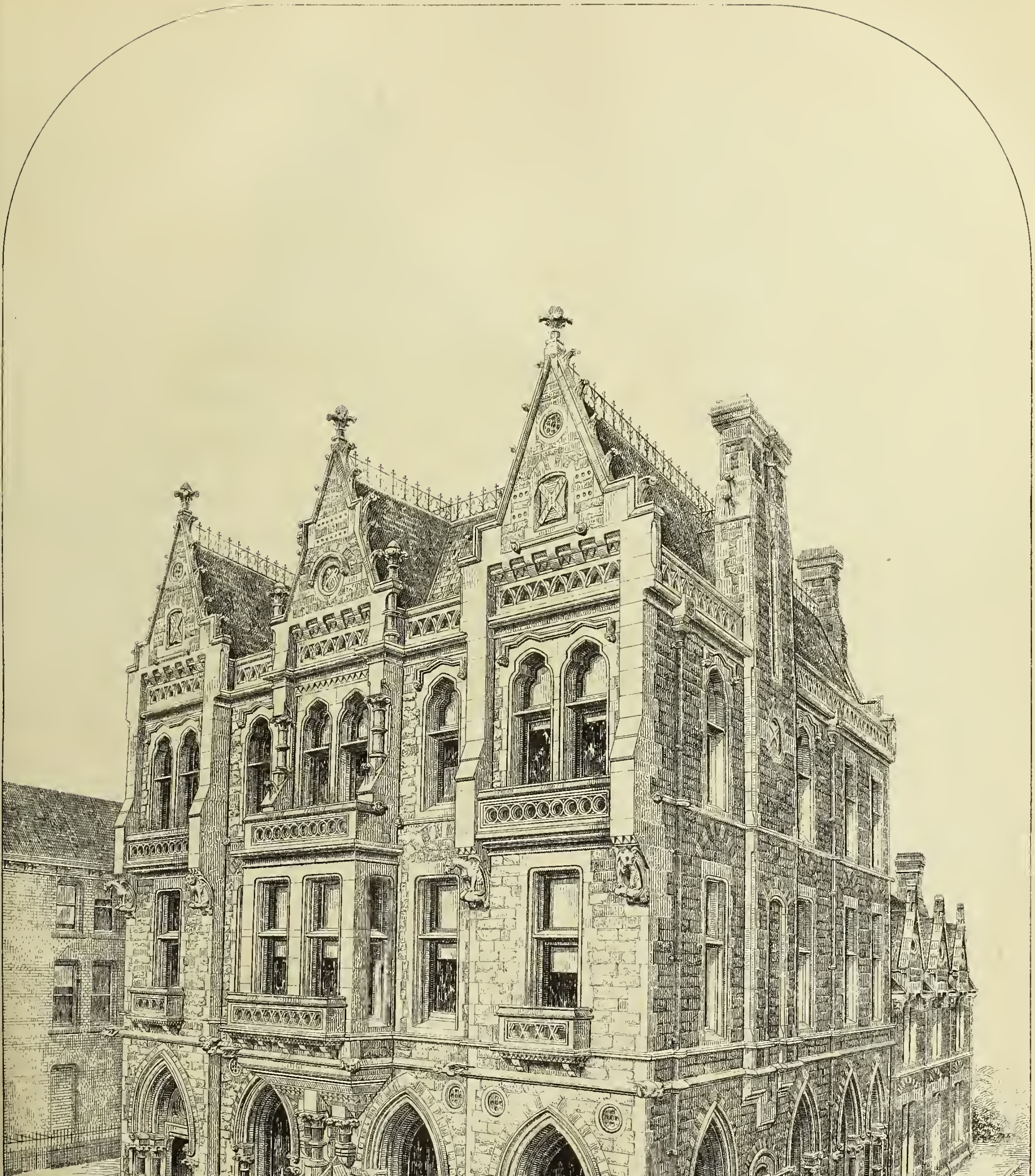
SUPPLEMENT TO THE BUILDING NEWS MAR. 3rd 1871.



VILLA RESIDENCE : REDRUTH : CORNWALL ALFRED LANYON ESQ^{RE}. PROPRIETOR.

James Hicks, Architect
Nov: 10th 1870

Supplement to the Building News Mar 3rd 1871.



H. Abbott, Lith.

Printed by Whiteman & Bass

MESSERS BACKHOUSE & Co's NEW BANK, SUNDERLAND.

(VIEW FROM THE NORTH-WEST.)

GEO. GORDON HOSKINS, ARCHITECT, DARLINGTON.

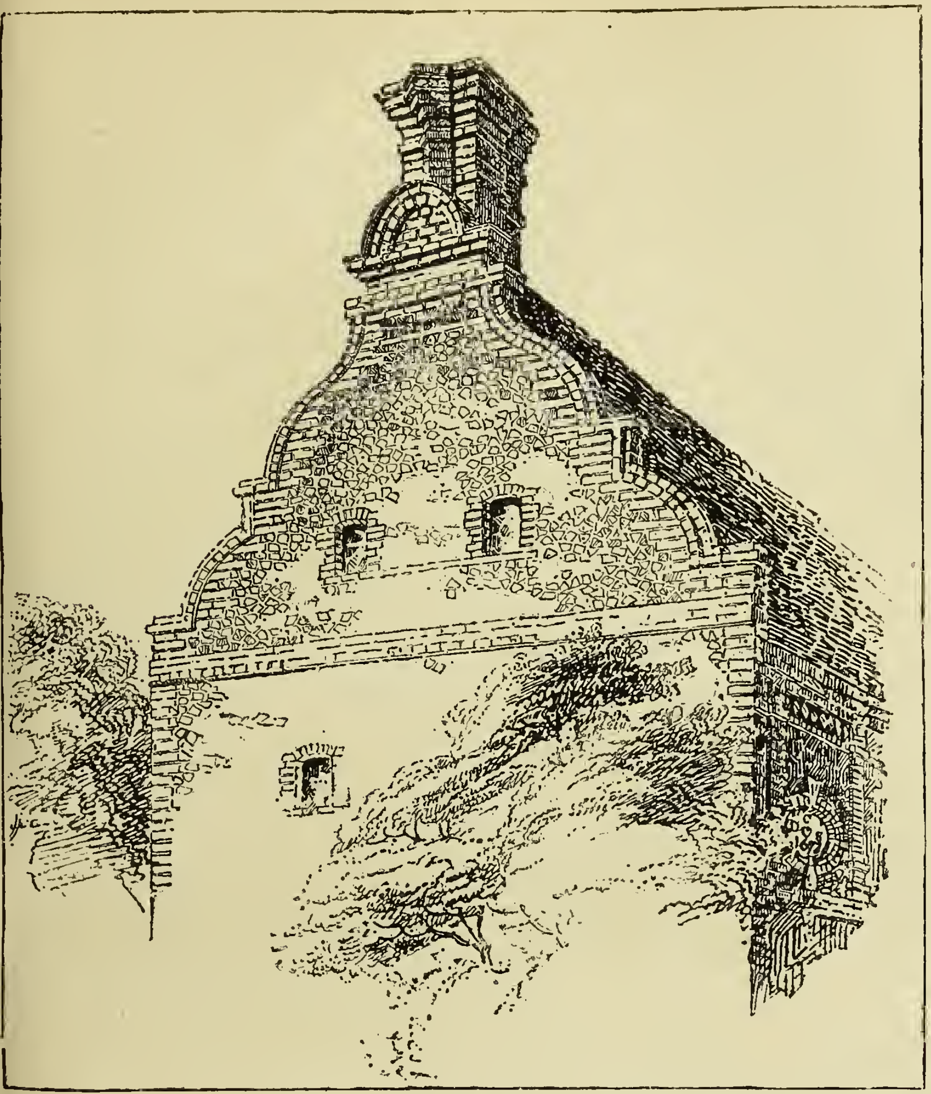


Fig. 2.

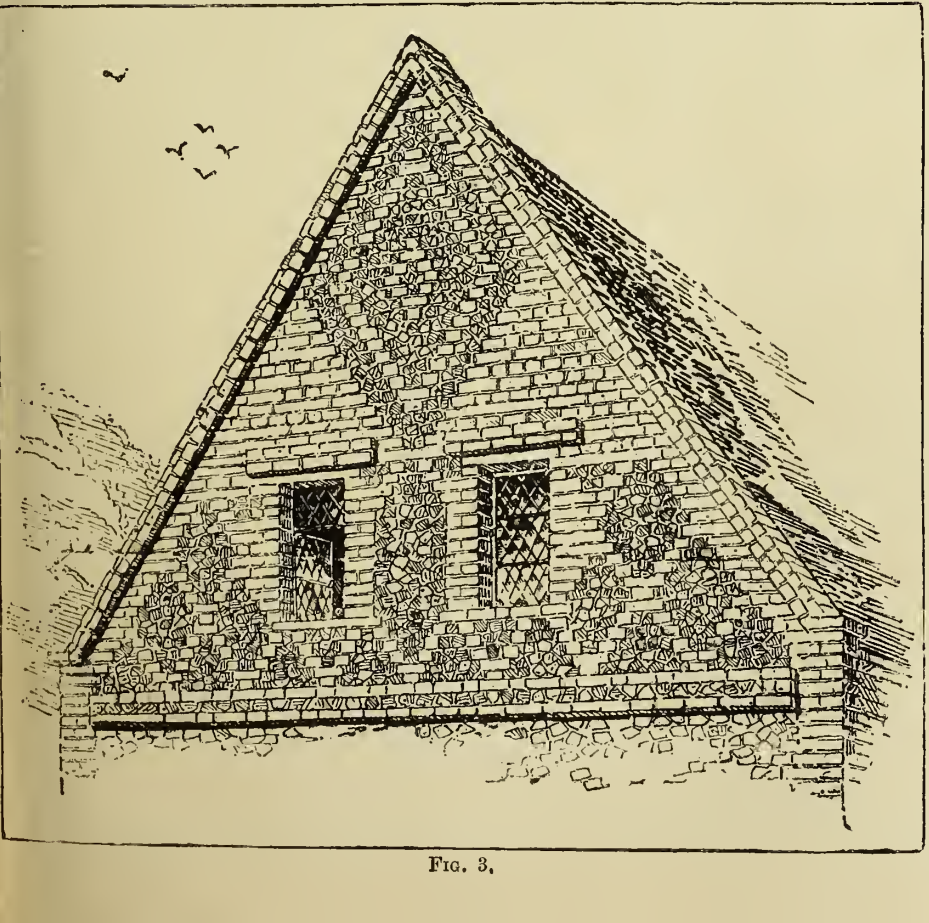


Fig. 3.

ANCIENT BRICK AND FLINT COTTAGES AT BROADSTAIRS, IN THE ISLE OF THANET.

THE accompanying illustrations of some of the old cottages at Broadstairs represent the very picturesque class of construction in brick and flintwork once apparently universal in the Isle of Thanet and many parts of Kent, and of which numerous specimens still remain, although unfortunately most have tbeen tampered with and partially spoiled by he insertion of modern sash-windows and other incongruous features. The house shown by the engraving No. 1, is situated at the bottom of the principal street at Broadstairs, at right angles to the sea ; one that has fared better than most of its kind. Only one of the upper windows remains in its original condition, as shown in the engraving, the rest having been superseded by larger modern sash-windows. The remarkably small size of the original windows is characteristic of these cottages, and particularly of their gable ends. The lower windows now only show the outer framework with the long and short jambs of three courses of bricks in height, and the segmental arches with their key-blocks. The ancient filling-in has entirely disappeared in almost every case in the Isle of Thanet, to the great injury of their character. In the engraving, they have been restored after a pattern found so constantly in cottages on the estate of Sir E. Deering, near Ashford, as almost to be now a proof that cottages with such semicircular-headed subordinate lights must be his property. Whether or no the ancient treatment was the same I am not aware, but it seems probable, and it is, at any-rate, a good and appropriate one.

The doorway at the further end of the view (No. 1) does exist, but is perfectly hidden by growth of ivy at present. That in the middle of the façade had been superseded by a more common modern one. Over the former is a terra-cotta tablet bearing the date 1671.

The special and interesting treatment of this example is its division into panels on the first floor by means of pilasters one brick wide. These do not rest simply upon the brick band which runs as a string below them, for they are flush with this, and therefore the projection of their bases needed a provision, which has been piquantly met by making the lower course of their plinths a hollow moulding, projecting corbelwise. The pilasters have no proper capitals, but there is a frieze, the lower member of which, a single course of brick, profiles round them ; the rest, formed by blocks of two headers placed diagonally, and the spandrils filled in with cut flints, is continued between the pilasters ; and several courses of plain brickwork above form a species of cornice thrown into deep shadow by the eaves of the roof above.

The two gables are very differently treated. The one seen in the same view, without a chimney-stack rising from it, with a picturesquely carved outline and segmental pediment at top, is filled in on the face with pilasters in harmony with the front. The other gable is seen in engraving No. 2. It is not very visible from the street, but is quite worth the risk of trespass into a neighbour's yard to see; and as the neighbour was a very civil one when I committed that offence, the risk is not a great one. The gable is as beautifully a proportioned one as I have met with, and the stack of chimneys well grouped ; the whole is executed with many little niceties of detail which will well repay a careful examination. Engraving No. 3 shows another interesting diapered gable end, which faces the same street in Broadstairs.

John P. Seddon.

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The annual meeting of the Architects' Benevolen Society will be held in the rooms of the Royal Institute of British Architects, 9 Conduit-street, on Wednesday, the 8th inst., at which it is hoped by the Council that the members will make it convenient to attend.

Furniture & Decoration.

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MURAL DECORATIONS IN NORFOLK CHURCHES.

THERE is scarcely a richer field to be found, and certainly not in England, for mural Mediæval decorations than the county of Norfolk; and the treasures of this character which it posseses deserve more study than they have hitherto received, the more because their continued existence cannot long be reckoned upon. Many have been only recently discovered—and, it would seem, only discovered in order, as it were, to be destroyed. Thus, with the case of a most interesting painting lately uncovered at Starston church, on the back of a recess, we are told by Mr. Phipson, in a communication on the subject to the Norfolk and Norwich Archæological Society, that the colours, when the niche was first opened, were exceedingly bright and perfect, but had become so pulverised by age that the slightest touch destroyed them; and that he found it quite impossible to secure the smallest portion, as the removal of the plaster shook the colour off like dust. Mr. Seddon gave a similar account with regard to some paintings of a bolder description, found at Llanbadarn-Fawr Church, near Aberystwith, in a short paper which he read during the last session of the Institute of Architects.

It is too generally assumed that all such decorations were but rude and coarse attempts at art, and that no great loss is sustained in consequence; but this is a grievous error. Some of the earlier ones—such as those still to be seen by the adventurous creeper into the crypt under the transept of the cathedral at Canterbury—are unquestionably most primitive in character and execution, yet even from these there is much to be learnt as to the proper general treatment of such work; and they are, besides, most valuable and interesting links in the history of art; and as no two examples of mural decoration are precisely alike, not one can be spared, if merely considered as an example of the conventional rendering of sacred subjects handed down from lone antiquity until the decay of Gothic art—all apparently obeying some general traditional laws, and yet each suggesting some new and original thought or scheme of decoration.

The painting to which we have referred above—that, namely, which was, but is not, in Starston Church, Norfolk, is illustrated by a carefully-coloured lithograph among the "Original Papers published under the direction of the Committee of the Norfolk and Norwich Archæological Society, established for the encouragement and prosecution of research into the early arts and monuments of the county." It is to be found in the seventh volume, and fourth part of the said volume, of their papers, published by Messrs. Miller & Leavens, of Norwich. It was at first supposed to represent the death of some local celebrity, but Dr. Husenbeth is quoted as an authority as to its never having been customary to represent upon church walls any family history, or anything unconnected with saints or sacred history. The explanation of the subject which is given by Mr. Phipson, and which appears to be the correct one, is, that it represents the death of the Blessed Virgin. The figure of the Virgin unfortunately has been destroyed, probably at the time of the Reformation, but the bedstead upon which she lay, and a portion of its coverings, remain, with a sort of panelled dossal at the head, by the side of which is a small painting of the Crucifixion, as if it had been a venerated object of contemplation by the deceased. Of this painting, Mr. Phipson says the execution was very beautiful, and that it was a perfect miniature, and would bear looking at with a magnifying glass; a description which evidently would not apply to the rest of the composition and its larger figures. Immediately behind the head of the bed, at the left-hand side of the picture, stands S. Paul, holding a scroll, with the inscription "*Precor te Maria.*" S. Peter, wearing a cope, is stretching his hands over the dying figure of the Virgin, and S. John appears in the background. Next appear some female mourners and various friends and acquaintances, and the remainder of the apostles complete the range of figures, which stand, as it were, behind a reddish diapered parapet or palisading; that again rests upon a sort of green cornice, with a rude scroll ornament upon it, which recals the character of ornament which we some short time ago described as connected with mural decorations which have been discovered at S. Clementi at Rome, and copies of which are now exhibited at the South Kensington Museum. In fact, the whole composition in this case has considerable resemblance to those, proving the consecutive character of the series of which all the Mediæval compositions formed a part, and enhancing the value of each separate link of the chain. The background is a yellowish green, and at the apex of the arch the soul of the deceased, as a small naked figure, is being borne up to heaven in the usual conventional winding-sheet by two angels issuing from clouds on each side. The date of the execution of this fresco is believed to have been late in the thirteenth or early in the fourteenth century.

Another curious mural painting, discovered in the church at Sporle, Norfolk, is illustrated and described in the same volume by Mr. C. J. W. Winter. It appears that in 1866 the attention of the Society was called to the discovery, by the rector of the parish, of the painting in question, and Mr. Winter made accurate drawings of the various compartments into which the composition was divided, and Dr. Husenbeth examined and explained them, and a paper of description of them, with a notice of the church, by Mr. G. A. Carthew, was published in the "Society's Transactions" of Dec. 6, 1866." The painting is executed in distemper, and the legend of S. Catherine is represented in twenty-five panels, eleven of which are drawn with great freedom and boldness of outline; but in the Virgin Saint great delicacy is pourtrayed, the colouring of her figure being feminine and subdued. The rest of the series are evidently by a far inferior hand to the first eleven, the drawing being bad and coarse, the forms grotesque and ludicrous; and the colouring, in which red predominates, is harsh. The date of the painting is indicated by the costumes, the ornaments of which, in some instances, are curious—viz., the chaplets of flowers or jewels, of rare occurrence in representations of Mediæval decorations; but the curling hair, forked beards, short-cut tunics worn close to the skin and scalloped round the bottom; the parti-coloured and motley dresses, the long toes to the boots (termed crackowes, and so named from the city of Cracow, whence the fashion was derived), the pointed basinet, &c., all belong to the early part of the reign of Richard the Second.

We must refer the reader to the paper published by the Society for the elaborate and interesting description of the several subjects of this composition, which are divided from each other by a simple red line, the whole being surrounded by a simple border, with a white and red ornament on a black ground.

SHELLAC VARNISH FOR FURNITURE, ETC.

THIS varnish has been employed by cabinet-makers upon their ware, but not generally as a finishing varnish. It has generally been employed when much diluted for the purpose of filling the pores of the wood to form a good body, previous to the application of copal or finishing polish. Shellac is prepared from a gummy substance deposited upon trees by an insect. *Seed lac* is more costly and better than shellac, being the select parts from the trees, free from many impurities which exist in the latter. Either kind forms a varnish when dissolved in alcohol, which alcohol should be a good article, say 0·80 to 0·85 sp. gr. This is the kind of varnish most frequently used by pattern makers, &c., but is hardly suitable for furniture or other similar articles on account of its containing a yellowish colouring matter which injures the appearances of the surface to which it is applied. Cabinet-makers, therefore, employ a bleached solution of shellac, particularly for white or light-coloured woods. The bleaching of shellac is generally effected on a large scale by chlorine or some of its compounds, or by sulphuric acid; the bleached article costs about 50 cents per pound, and the unbleached less than half this sum. The bleached shellac is frequently dissolved in spirits of wine for use as a varnish by cabinet-makers. This varnish is quite apt to stain any inlaid metallic ornament upon the furniture, or any metal attached to it, in consequence of the varnish retaining a small proportion of the bleaching compound in solution. Another process of bleaching may be adopted, which renders the varnish free from this objection, and very much reduces the cost of the bleached article of shellac or seed-lac. This process consists in the use of animal charcoal as a bleaching powder. It is prepared in the following manner:—Any quantity of yellow shellac, previously broken in small pieces, is conveyed into a flask, alcohol of 0·83 sp. gr. poured upon it, and the whole heated on the hob, or, in the summer, in the sun, until the shellac is dissolved; upon this, so much coarsely powdered animal charcoal is added to the solution that the whole forms a thin paste; the flask is closed, not quite air tight, and left so for some time, exposed to the sun; and in eight to fourteen days a small sample is filtered, sufficient to ascertain whether it has acquired a light yellowish-brown colour; and whether it yields a clear, pure polish on light-coloured woods. If this be the case, it is filtered through coarse blotting-paper, for which purpose it is best to employ a tin funnel with double sides, similar to those employed in filtering spirituous solutions of soaps, opodeldoc, &c. The portion which first passes through the filter may be preserved separately, and be used as a ground or first polish. Then some more spirit is poured over the charcoal upon the filter, and the solution used as a last coating. The solution of shellac purified by animal charcoal has a brown-yellow colour, but it is perfectly clear and transparent; when diluted with alcohol, the colour is so slight that it may be used in this state for polishing perfectly white wood, such as maple, pine, &c., without the wood acquiring the least tint of yellow.

Shellac can be dissolved by an alkali, but it is rather a saponaceous compound, and it does not make a good varnish for resisting water. It is best to dissolve it in alcohol in order to get a good varnish, and one that will combine with colouring matters for various purposes. By adding some lampblack to alcoholic lac varnish, a beautiful varnish for black leather is produced.

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BACKHOUSE & CO.'S NEW BANK, SUNDERLAND.

THREE weeks since we gave the interior view of this bank, and we now give an illustration of its exterior. We have nothing to add to the rather elaborate description we gave three weeks ago, p. 104, beyond stating that Mr. John Hindmarch was the clerk of works. We are indebted to Mr. G. G. Hoskins, the esteemed architect of the building, for the beautifully-executed photographs from which the illustrations have been engraved by Mr. Abbott.

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THE ARCHITECTURAL MUSEUM.

THE Saturday afternoon visits of the Architectural Association to works in progress are very popular with the members. It is doubtless quite true (as Mr. Roger Smith lately remarked in a paper read before the Association) that *construction* can be best learnt on the scaffold, and hence the value of such visits in giving to the junior members—who have had few opportunities of inspecting works actually in progress—an insight into the different methods of construction suited to various requirements. But *ornament* cannot be so advantageously studied under such circumstances, even supposing all the ornament of modern erections to be worth studying, which it most decidedly is not; and therefore we think the Committee of the Association took a step in the right direction in arranging for the visit which was made by about sixty members to the Architectural Museum on Saturday afternoon last. At this valuable, but ill-supported Museum, situate in Tufton-street, Westminster, architectural ornament of all periods, and from some of the most noted architectural monuments in the world, may be studied with ease and profit, the casts being very varied as to subject, and in great profusion as regards number. Mr. J. P. Seddon, the hon. sec. to the Royal Institute of British Architects, and a warm friend of the Association, accompanied the visitors over the Museum, and devoted an hour to pointing out the beauties and peculiarities of the examples, and tracing the development of Gothic foliage, &c., from one period or example to succeeding ones. In this he was assisted by Mr. Wallis, the curator of the Museum. In conclusion, Mr. Seddon appealed to the members of the Association to support and attend the Museum, not only for their own but for the common good, remarking that when many of the senior members of the profession were asked to help the Museum, the frequent reply was—"Oh, what's the good? Nobody goes there." If the Museum was better attended by the junior members of the profession this excuse could no longer be pleaded.

On the motion of Mr. Lacy W. Ridge, seconded by Mr. J. S. Quilter, a unanimous vote of thanks was given to Mr. Seddon for his services on the occasion.

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SCIENCE IN ARCHITECTURE.*

(*Concluded from p.* 153.)

PAINTING.

THE value of paints prepared from oxides of iron is very generally overlooked by architects. These paints some men of experience pronounce to be superior to those prepared from the oxides of lead; at any rate they answer equally well, and the cost is considerably less. But I propose to allude to the value of these paints specially for use upon iron. It has been acknowledged for years that the oxides of lead or copper, if put upon iron, will eat into it and promote corrosion, and yet how frequently do we meet with the requirement that ironwork shall have a coat of red lead before leaving the foundry: a worse provision could hardly be made, unless it be to specify verdigris, a preparation from copper; this also is sometimes used, though it eats holes into the iron in a very short time. Very shortly after ironwork is painted, the iron will be observed corroded, and the remark be upon everybody's tongue, "This ought not to be going so soon, ought not to want painting so soon." The fact is, lead has been put upon it, and nothing else could be expected. The reason red or white lead causes metal to corrode so quickly is explained thus: directly the air gets to the metal, not only does natural corrosion take place, but a chemical action sets in between the lead and the iron, and increases the corrosion. No harm can result from painting iron with red or white lead so long as the oxygen of the air or water does not get to the metal, but as it is almost sure to do so, it is best not to run the risk. The same quantity of paint made from the oxide of iron will cover a surface of twice the area as that of paint prepared from lead, though the price is much less. Aquafortis, one of the strongest acids, if poured upon red or white lead, will fuse it instantly, but has no effect upon paint prepared from the oxide of iron. With regard to the numerous anti-corrosive paints in existence, I may say, in one word, it is of no use trying to cheat Nature; anti-corrosive paints will not answer the purpose their name implies; all paints must yield eventually to the action of the oxygen, and the work be repainted, and for many reasons it is well that all work should be repainted at proper intervals. All that can be done to attain the object of such paints is to so pick and form the stuff as to reduce the power of the elements to affect it to a minimum This is found best secured when the composition forming the paint is granular, not so finely powdered as ordinarily. The finer the powder of the mixture the greater the tendency for air holes to form as the paint is being laid on; paint that is more gritty or granular affords a better opportunity for the air to escape, and therefore reduces the liability of corrosion to the utmost limit. The coating of oil is the best preservative, and not the paint mixtures, and therefore those mixtures which, like lamp black, go a long way in mixing with oil, answer better than those that require more of the mixture to form the paint. For covering urinals or other work exposed to the influence of strong acid, black varnish is the best article to use; it should be frequently applied, and is inexpensive. Woodwork before painting ought to be well soaked with good priming, principally turpentine; this keeps damp out of the wood; a coat of paint has not the same power, as it forms a skin on the wood instead of soaking into it. The priming should pass over all the woodwork where exposed, otherwise damp may come into contact with the portion not primed, and it will find its way down the wood and cause blisters in the paint where we have thought them unlikely; blistering is often a result of insufficient priming. Painters, as a rule, neglect to prime the tops of outside doors; damp gets down the wood, and blistering results. Knots will sometimes show through paint-work, and lead to the inference that no knotting has been used, whereas the effect may be merely the result of using inferior stuff. It is of great importance that knotting of good quality be used; it may be purchased at half the cost of the well-known patent knotting, but will answer no purpose. The best driers are prepared from sugar of lead; the lighter the driers the better their quality. The quantity of driers required depends upon the time of the year the paint is used, and the character of the oil. There is a great deal of bad oil in use now, distilled or by other means prepared from resin; this will not dry properly, do what you will with it, and it should be condemned for paint work at once. It does not cost half as much as linseed oil, and there is therefore at all times danger of it getting into our work. When fresh, and sometimes when of long standing, it may be killed by an application of petroleum spirit, or potash; but generally, when this oil proves to be in the paint the best course is to scrape the whole off with salamancas or hot irons in the usual way. No oil will answer so well as linseed oil well boiled, or raw when there is not the necessity for so much driers; raw oil may be used in summer weather, and should always be used for white paints, as the boiled oil discolours them; driers in this latter case must be added. Often when we specify the best copal varnish we get nothing but common oak, though the difference in cost may be from seven shillings to twenty-one per gallon. The best proceeding for the architect is to price the varnish, and take special means for obtaining it. For ordinary purposes, where we usually specify common oak varnish, copal varnish diluted with oil answers better, and in practice is often adopted. Before petroleum came into such general use, turpentine was sold at £130 per ton, but since it has had such competition with petroleum spirit, the price has fallen to £30, or to about double the present price of petroleum spirit.

One more remark upon this subject of painting. It is a great mistake not to be particular about painting ironwork placed at the top of towers or such out-of-the way places; if not painted regularly, there is great danger of the screws and pivots that hold the ironwork together, as well as the work itself, corroding, and the whole tumbling down. I met with an occurrence of this nature recently, where the ironwork upon the summit of a spirelet fell, and on examination there was no other evident cause than corrosion; damage, of course, resulted to the buildings below.

GLAZING.

It will be a matter of regret to most of us that the use of crown glass is dying out, instead of more effort being made to improve and develope the principle upon which this quality of glass is manufactured. Sheet or cylinder glass, being made in a cylindrical form, and then flattened into sheets by bending, is necessarily defective, one surface is expanded while the other is contracted; this uneven finish consequently produces that disagreeable wavy appearance that we see in windows glazed with cylinder glass, and so long as this is used in windows the defect must exist. Clients will sometimes say the glass is not good, or it is not picked, but whatever may be desired this effect cannot be avoided with cylinder glass. Crown glass, on the other hand, is true, and has none of that wavy appearance, because on being once blown it is made, and does not require bending; the slight curve of the glass consequent on the way in which it is blown is not sufficient to present any disadvantage. The use of crown glass is dying out because it is made in such small sizes: 24in. by 18in. is one of the largest sizes cut out of a table, and therefore its use is being superseded by the cylinder glass, which is made very much larger. At present ten times the quantity of sheet glass is used as compared with the crown, and this is proved by the state of the manufacture; at the well known works in S. Helens ten sheet houses are kept going and but one crown house. Sheet glass may be freed from the waves alluded to by a process of grinding and polishing, but this makes it expensive; it is usually adopted when the glass is required for large pictures. For small size pictures crown is invariably used because of its superior transparency. In fixng glass the putty used needs careful attention; the same objection to inferior oils used in paintwork exists in reference to putty; the putty never hardens if made with these oils. A glazier told me he could now buy putty ready made for less than the cost of the ingredients with which he himself made it; of course the putty alluded to was that made from the common oils, and while it offers such advantage in price it is likely to be in great demand.

PAPERHANGING, &c.

Ordinary wall papers are now made of very common materials, and hence they may be purchased at the present low prices. Twenty years ago one and sixpence for a dozen yards was the price of the lowest class paper, now they may be purchased at 2½d. Formerly, as now, with the best papers the hanger's difficulty consisted in getting the paste soaked sufficiently into the paper to give a good key, now the difficulty is to get the paper on to the wall before it tears through saturation. The hanger used to paste several lengths and let them lie soaking, now his concern is directly he has pasted one to put it up. Formerly good linen rags only were used in the manufacture of these papers; now all sorts of refuse is used, and a great deal of jute and straw.

With regard to the durability of the prints upon papers, which, after all, is the principal thing, a good price must still be paid for papers that will last. The cheap printed papers are those that are struck off by machinery hundreds of feet at a time, and the tint cannot be made by this means to take the hold of the paper it has in the case of the hand or block made papers, by which means small portions only are printed at a time, making them necessarily expensive. Rubbing will not take off the print from these, though it soon disfigures the machine made papers. The great difficulty is to distinguish between them, since the machine made may resemble in appearance papers three times their value. Defects in paperhanging, evidenced by good papers leaving the wall, result from inattention to the quality of paste used; these require a very different strength of paste to that used for common papers.

Just one word in conclusion upon coverings for floors. Many a good floor has been seriously injured by the ill-advised use of kamptulicon; dry rot has set in the wood; this is sometimes attributed to its being put upon the floor after the floor has been washed, and the material being of that nature that it will not allow the moisture to evaporate produces dry rot; but there are other floor coverings having a similar quality, yet do not produce the same result, and the probability is that the peculiarity of kamptulicon spoiling floors is that it imbibes and retains the water poured upon it, and so presents a damp surface for a long time to the wood. It is a composition of india-rubber and cork; the india-rubber gives it its soft pliable surface, and doubtless because of its mixture with cork allows water to soak through it, but interferes, like waterproofing, with evaporation. Kamptulicon, therefore, though a nice soft material for aisles and passages, should not be used where damp may get underneath or upon its surface. Linoleum is a composition of linseed oil and cork, rolled on to strong canvass; this does not let the moisture soak through; it is not so soft as kamptulicon, but softer than ordinary floor or oilcloth. Oilcloth is formed of strong canvass stretched, and having several layers of white lead and paint coated upon it. Though not so soft as linoleum, it has an advantage in that it retains its fresh appearance much longer; any soiling will thoroughly wash off, but linoleum soon becomes disfigured, and will not clean. The longer oilcloth is kept before using the better, and if well seasoned, no other material equals it for durability and protection to floors. I need hardly apologize for this and similar digressions, since the necessity for a scientific knowledge of such details meets the architect in every turn of his professional practice.

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Proposed Improvements at Dover.—The inhabitants of Dover are bent on beautifying the town, and upon copying some of the neighbouring sea-side resorts. With this end in view, a company has been formed, with a capital of £12,000, for the purpose of erecting a promenade and pier—not the most successful, hitherto, of commercial ventures.

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* Read by Wm. Parslow Esq., before the Liverpool Architectural and Archæological Society.

THEORY OF THE ARTS.

Art Education.

MATHEMATICAL INSTRUCTION.—IDEAS OF FORM AND MAGNITUDE.

(*Continued from page* 42.)

BEARING in mind that the most invariable and general laws and facts of inorganic science underlie and determine all complex phenomena or organic science, while the former are not in the slightest degree dependent on the latter, a previous knowledge of such invariable laws is absolutely necessary. Beginning with mathematics, then, as the universal basis or science of all others, the study most fitted for the primary object of exercising the faculties of perception and comparison, and giving us the simplest ideas and abstract notions, it must not be concluded, therefore, that it is the only study that can be taken up in commencing a course of professional instruction. Other sciences can be learnt simultaneously, as some of the physical ones, at least so much of them as relate to general laws; but, on investigation, it will be found that many of the laws and relations common to physics are dependent on mathematical conceptions, so that the *generality* of physical questions and ideas may be resolved into mathematical ones. Hence, I put it first as a *method*, no less than as a science of importance. Its main object being to determine one quantity or magnitude from another by the relations found to exist between them, it may be regarded as a more complex study than sciences like chemistry and general physics, where merely observed facts and phenomena form the staple of knowledge; but the incomplete state of these latter sciences, the want of the exact relations between the forces of Nature, render our present acquaintance with them of a more empirical nature, and therefore easier. In a mathematical question we have to determine the unknown from the known; we have a twofold operation to perform; we have to establish what function or relation the one is of the other. Here, then, perception and comparison are brought into play. Next, we have to ascertain the abstract value of one from the other numerically or geometrically, and thereby call into exercise the faculty of analysis and abstraction. Mathematics may consequently be divided into two parts—the *abstract*, which treats purely oft he numerical or geometrical relations of quantities; and the *concrete*, which has the discovery of the relations between distinct things or ideas dependent upon the objects investigated, as the equations of phenomena. Here again, then, we have two divisions of ideas—one the general, simple, and abstract, embracing the calculus and all numerical ideas and analysis, and the other the mixed ideas of geometry and mechanics. These latter are necessarily founded and are dependent on the pure and simple relations of number and magnitude, and therefore may be placed second. Logically, indeed, the extent of mathematical science is *universal*, and most questions can ultimately be resolved into one of number. The most isolated phenomena of physics have been, by its aid, resolved into some common relation, though it will require many years of further inquiry to establish anything like approximate numerical relations to the more complex and variable conditions of many physical and organic problems which do not readily admit of fixed members. *En passant*, the same remark may apply to many subtle questions bearing upon the æsthetics of art, such as the laws of beauty and proportion in architecture, which have already found a host of ingenious expounders, wedded, however, to various hypotheses. The failure of these theorists seems to me to be the entire neglect in most cases of other modifying elements or ideas that necessarily belong to their inquiries as applied to practical art. Starting from some abstract ration or principle, they apply it *abstractly* to a complex or organic case, without taking into consideration various contingent circumstances or specific conditions of the art which is as various as the purposes to which such art is applied. Beautiful and clever therefore, as many of the numerical, geometrical, or harmonical theories are that have been prepounded by able and painstaking investigators, they one and all, I think, lose sight of the practical and organical condition of architectural design, which, I contend, must be founded upon more complex and concrete laws, as variable as the materials of the nature and purposes required of art, and therefore requiring a more encyclopœdical and comprehensive treatment ere it arrives at its "positive" phase. The method to be followed for such an end is that which takes the simple and abstract as a basis, and, by a process essentially founded upon a simple law of Nature, gradually form a chain of dependent and even decreasingly simple combination, rising from the physically-useful to the morally-perfect.

From the simply abstract *numerical relation*, to which may be referred all ratios between homogeneous things, we may pass to consider the next simple and, indeed, equally important, conceptions of magnitude or extension which geometry deals with. The province of this branch of mathematics is nearly co-extensive with that of number, though not so strictly independent of observation. All kinds of extension, lineal, superficial, and that of capacity or solidity, come within its grasp. Again, each and all of these are resolvable into the simple relations or extension of right lines, and under which all forms of nature may be measured and defined. Geometry may also be divided into two branches, as abstract or general geometry, and concrete or special geometry.

The ancients' method of geometry was *special*, and was confined to the study of certain forms of nature, in which all questions —however independent, so long as they concerned the same form—were grouped together. Modern geometry, on the other hand, treats under one view all similar phenomena or questions, separating those only that relate to the properties of special forms. It abstracts every general question as distinct from particular forms and properties, and for this more rational and progressive method we have to thank Descartes. As a fundamental course of study for the architect, no science can furnish a better method, while its application to all requirements of art makes it a study of special value. If instead of copies from the antique, landscape and figure-drawing, architectural students were grounded in the elements of form, and the various relations of lines and surfaces, simple and curved—the latter being taught rationally, as well as in a practical sense—we should ultimately see the profession taking a higher position than second-hand dealers in a defunct art, and aspiring to become devisers of one whose foundation rested not on caprice, but on science and common sense, and whose watchword, like all other species of human acquirement, was Progress.

But the manner in which most students destined for the profession pick up their practical and theoretical knowledge of this and other sciences, is grievously at fault. They begin where they ought to end. I have said there is a natural process in acquiring knowledge, beginning with the simplest facts and abstract ideas, and advancing to more elaborate ones; although a truism in statement, it is not really followed. We have a multitude of grade and rudimentary treatises, but they generally begin with some abstract definitions and ideas that had properly followed simple facts instead of preceded them. It has been remarked by an able writer, "Before knowledge can be organized some of it must be possessed," and that reasoning should begin only after an experimental introduction or observation. In opposition to this course of reasonable instruction, we have grammar before language, definitions and rules before the facts on which such mental forms are established. The conclusion of this view is, that for the purpose of instruction, objective knowledge, in other words, an experimental acquaintance with form in its endless variety should be the preliminary to geometrical knowledge as a rational science. The historical progress of the science, curiously enough, shows a similar succession; it was the special geometry of the ancients which dealt in elementary forms in the concrete that prepared the way for rational or abstract geometry.

G. H. G.

(*To be continued.*)

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COMPETITIONS.

Collyhurst.—A new church, with parsonage and schools, is about to be built at Collyhurst, by Mr. Charles P. Stewart, of the Atlas works, at a cost of £12,000, exclusive of land, which he has also purchased. For these buildings six architects of Manchester and London were invited to submit designs in competition. The gentlemen who were selected to compete were Messrs. Hansom, London; Paley & Austin, Lancaster; Holden, Brakespeare, Lowe, and Dawes, of Manchester. After a close contest, the designs submitted by Mr. Lowe were selected, conditionally that they can be carried out for the stipulated sum; and to those submitted by Mr. Dawes were awarded the second premium of 50 guineas.

New Assize Courts for Birmingham.—At the meeting of the Birmingham Town Council, last week, the Estate and Building Committee reported that a large number of plans had been sent in by eminent architects for the new assize courts, judges' lodgings, and corporate buildings, which the Council propose to erect on land purchased for the purpose at a cost of some £36,000. The time for receiving designs expired on Wednesday last, and it is proposed to engage a consulting architect to advise the Committee on the adaptability of the plans. It is doubtful whether the new buildings will be proceeded with for some time. The total cost to the town will be, it is stated, £250,000.

New Bridge over the Stour at Kidderminster.—Eighteen sets of plans were sent in for the above, the estimated costs varying from £480 to £3,000 4s. 6d. Three designs have been selected by the committee, which have been sent in by Mr. George B. Ford, of Burslem; Mr. T. D. Baker, of Kidderminster; and one under the motto "Modus" for further consideration.

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SCHOOLS OF ART.

Birmingham Society of Arts and School of Design.—The annual meeting of this society was held last week, Sir M. D. Wyatt in the chair. The report for the year ended the 31st December last stated that the classes had been well filled during the past year, the numbers attending having been 1,077. In 1869 they were 1,115. One prize and three honourable mentions were awarded amongst seven competitors. The school received one bronze medal at the National Competition at South Kensington in May last. This very unsatisfactory amount of success at the great National Competition of all the schools had been under the serious consideration of the committee. An investigation into the cause was being carried on, and the committee had recently had an interview with Mr. Bowler, official inspector of the South Kensington Art Department, with reference to the subject. The annuual Government examinations in drawing, perspective, and geometry were held in March last. 315 students entered for examination, of whom 219 were successful, and forty received prizes. Forty-eight third-grade prizes of books were awarded for works sent up for inspection in London; the number last year was twenty-nine. Special prizes had again been liberally offered for original designs for manufactures, the results of which would be made known at the annual meeting. Five prizes had also been awarded for home studies, the competition being limited to artisans. The committee were glad to find that the students continued to avail themselves of those means of self-improvement commenced last year. Two students, W. H. Marklew and Thomas Reeves, had obtained National Scholarships at South Kensington of £52 per annum, making eight from this school who had had this opportunity of studying in London, of whom three remained under instruction. A class for wood engraving had been commenced as an experiment. Five pupils entered, one of whom was obliged to abandon the study on account of her sight. The others had made satisfactory progress, and the class had entered upon a new session with an increased number of students. The income of the school was again satisfactory, there being a surplus of £27 4s. 9d. to carry forward; still a balance of an old debt, amounting to £173 12s. 8d., remained at Christmas last, which ought to be extinguished.

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ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—The fortnightly meeting of this Association was held on Wednesday week, Mr. R. Morham, jun., president, in the chair. A paper was read by Mr. William Richardson, entitled "A few remarks on the Architects and Architecture of the present day." Mr. Richardson drew attention to two matters which, it appeared to him, greatly required amendment. One of these was the relations between architects and those in their employment. He deprecated the common custom with some architects of having their work done by pupils instead of by regularly-trained draughtsmen; and proposed that something should be devised by the latter in the form of a union, such as obtains among certain trades, to restrict the number of pupils. The other topic on which Mr. Richardson principally dwelt was the want of a due appreciation of architecture at the present day; and he showed that until a more general interest was taken by the public in the art, little was to be expected in the way of amelioration. Remarks having been made by several members, a vote of thanks was awarded to Mr. Richardson for his address.

Oxford Architectural and Historical Society.—The first meeting this term was held in the Ashmolean Museum on Wednesday evening, the 15th ult., when an interesting paper on the history of Merton College was read by Mr. E. G. Bruton. The College itself was visited on Saturday week, when nearly a hundred of the members and their friends were present. They were received in the Hall by the Bursar, Rev. S. Edwardes. After a short address from him, Mr. Bruton exhibited a chronologically-coloured plan of the College, and pointed out the order in which the several buildings were erected, the approximate date of which he stated. Mr. James Parker made some remarks on the stained glass in the Chapel. The party then visited the City wall, when some interesting particulars were given by Mr. Parker, who said that the probable date of its construction was about the middle of the reign of Henry III.

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PARLIAMENTARY NOTES.

Hyde-park and the Albert Memorial.—Mr. H. Lewis, on Monday week, asked the First Commissioner of Works whether it is in contemplation to take any and what portion of Hyde-park on the south front of the Albert Memorial for improving the Kensington-road at that part; and for what purpose the work in Hyde-park on the south front of the Albert Memorial is now being carried on.—Mr. Ayrton said the work to which the hon. gentleman referred was the construction of some steps connected with the base of the Albert Memorial, which were required to carry out the original design. With regard to the road, an arrangement was come to last year with the District Board of Works of Westminster to prosecute a Bill to improve it, but that Bill was not proceeded with, and therefore the arrangement fell to the ground; and as the Exchequer did not undertake to pay the expense of improving the metropolitan roads, unless the District Board could make an arrangement with the Metropolitan Board and the Exhibition Commissioners to carry out that desirable improvement, as he trusted they would be enabled to do, he did not see how that object was to be effected.

The Houses of Parliament.—Col. Wilson-Patten gave notice, on Friday last, of his intention to call the attention of the First Commissioner of Works to the rapid decay last winter of the stone of which the Houses of Parliament are constructed, and to ask if he was prepared to take any measures in consequence.

The Houses of Parliament.—Col. W. Patten on Tuesday asked the First Commissioner of Works whether his attention had been called to the rapid decay which had taken place during the winter of the stone of which the Houses of Parliament are constructed; and whether it was proposed to take any measure with respect to it.—Mr. Torrens also inquired whether the external portions of the Palace, reported on by Professors Faraday and Murchison in 1860 as having been up to that time preserved from decay by the indurating composition invented by M. Szerelmy, continue to resist the tendency to exfoliation of the surface of the stone observable in other parts of the building.—Mr. Ayrton said it could not be doubted that unfortunately a certain quantity of defective stone was used in the construction of the Houses of Parliament. Moreover, in large works of this kind, were some of the stones were highly carved, some pieces probably got broken, and here and there the broken pieces were put in in a very defective and improper manner, and as time wore on these defects became apparent, the bits of stone fell off, and created considerable alarm in respect to the stability of the building. That alarm was, however, entirely unfounded, and there was nothing at all which really affected the general character of the stability of the stone work of which the Houses were constructed. Some years ago the subject was carefully considered, and experiments were made with various processes to endeavour to preserve those stones which had exhibited signs of decay; but he was sorry to say that a sufficiently accurate record was not kept of these steps to enable them to judge satisfactorily of the effects produced. Not one, however, of those efforts had proved altogether successful. Of the many attempts, that of M. Szerelmy was undoubtedly proved to be the best; but still it was not one which could be relied upon for the permanent preservation of the defective stone. What had been done last year was to make an application of all the processes, under the superintendence of a competent chemist, and in the course of the spring it was intended to treat all the defective stone with that process which the chemist might, on the whole, think would be most efficacious. If it were found that some of the stones were greatly eaten into, it would be necessary that they should be cut out and new stones introduced; and in that manner, by constant attention to their repair, and at a comparatively small expense in each year, there was no doubt the outside of the building could be preserved for many centuries to come.—Colonel W. Patten inquired whether the attention of the right hon. gentleman had been called to the fact that it was the solid masonry which was giving way?—Mr. Ayrton said he was quite aware that some of the stones had been considerably eaten into by decay, and the face of these stones would have to be cut out and new faces introduced.

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Building Intelligence.

CHURCHES AND CHAPELS.

Beeston-hill.—Sir Andrew Fairbairn, on Tuesday, laid the foundation-stone of a new church at Beeston-hill, Leeds, to be called S. Luke's. Messrs. Adams & Kelly, of Park-row, Leeds, are the architects, and Messrs. Weatherby & Rymer, of York, the contractors. The style adopted is fourteenth century Gothic. There will be a clerestoried nave, with north and south aisles; and chancel, with organ chamber and vestry on the south side, and aisle on the north. The entrances are on the north side, and a separate entrance to the vestry is provided. Internally, the dimensions are:—Nave, 80ft. 6in. long, 47ft. 6in. wide; height from nave-floor to ridge, 52ft. 6in.; chancel, 30ft. long, 20ft. 6in. wide. Accommodation is given for 695 persons, and the estimated cost is £3,121. The building of a tower is in prospect when the funds will warrant that step being taken.

Lincoln.—A new (Roman) Catholic church is to be built at Lincoln. Messrs Hadfield & Son of Sheffield, the architects, have furnished the design for the structure. The style is Later English decorated, only that the church is apse-ended.

Ludlow.—A new church, which will also serve as a cemetery chapel, was opened at Ludlow on Tuesday week. It is in the Early English style of architecture, simply treated, and consists of a nave, chancel, and vestry. It is built of stone from the neighbourhood of Felton, the Clive estate, and dressed with stone from the Luston quarries. Accommodation is afforded for upwards of 200 worshippers, and the total cost is about £1,800. The architect is Professor G. G. Scott, the contractor being Mr. E. Edwards, Leominster.

BUILDINGS.

Chatham.—The Government has decided on the erection of a large central powder magazine on the uninhabited marsh land between Chatham and Sheerness, adjoining the Medway, at an estimated outlay of £90,000, which sum has been taken in this year's estimates. Of this amount, £20,000 will be voted this year, and the remainder as the work proceeds. The sum of £21,000 has likewise been taken in this year's estimates for the erection of a Royal Engineer Institute and halls of study, at the School of Military Engineering, Brompton.

Blackburn.—On Saturday last, a new school, the gift of Thomas Dugdale, Esq., J.P., of Griffin Lodge, Wilton, was opened, and dedicated to the use of the township for ever. The school is built in the centre of the Griffin estate, entirely of stone, and cruciform in model, with a small chancel, approached by a Gothic arch, for the purpose of public worship. It will accommodate 400 people, and is from the designs of Mr. James Bertwistle, architect,, Blackburn.

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TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

THE *BUILDING NEWS* SKETCH BOOK.

In addition to those acknowledged last week the following contributors have recorded their votes:—W. H. Lockwood, Geo. Holford, W. D. Dobson, J. R. Allen, W. Bingley, W. W. Bethell, Geo. Remington. Wednesday, the 15th inst. is the latest period for the receipt of votes.

Received.—W. H. C., R. D. & Co., T. H. S., W. Backhouse, J. H., W. S., A. S., J. C. J., W. H., A. & G, J. H. W., W. W.

J. Hicks.—Drawing returned.

J. P. S.—Illustration of national schools shall appear.

H. J. Snell.—*Two* sketches returned.

F. Titterington.—You are at liberty to reply to anything you deem incorrect. We give neither names nor addresses.

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Correspondence.

NEW LAW COURTS.

(*To the Editor of the* Building News.)

Sir,—"'F.'s' attempt at a simple solution" neither warrants "J. M. L.'s" strictures, deserves his ungrammatical misquotation, nor requires his unintentional corroboration.

The "open confession" à la novitiate (*not* "noviciate") is entirely an act of supererogation; so also is the solicitude to avoid initiation into the unfathomable! Leaving "J. M. L." still to contend that errors in bills of quantities are best reduced to a minimum by monopoly in preference to the application of that crucial test, competition, and the indubitable check a second surveyor would exercise on his confrère, to the quotation of such, to him, delectable embellishments as "wireing in to keep their names up," and to the enjoyment of the comatose state consequent on the *naively* admitted cessation of wonder—I am, &c., with apology for indiscretion, F.

THE ROYAL ALRERT HALL, KENSINGTON GORE.

Sir,—I am at a loss to understand the purport of the letter you published last week on this subject from an anonymous correspondent, who shields himself behind the initials of an honourable and kindred profession. Perhaps, however, the only mistake "C. E." has *not* fallen into in favouring your readers with his views has been in withholding from them a name which would give no value to his remarks. I have not seen the article in the *Echo* which has provoked his ill-natured strictures; and I should not have taken any notice of his letter but for the many gross mis-statements which it contains.

"C. E.," in order to prove his scholarship, I presume, drags in the mention of the Emperor Vespasian, who did not build the Coliseum, as it was for the most part, if not entirely, constructed by his son, Titus, and dedicated by the latter, according to Maffei, "in his own, and not in his father's name." The statement that the Albert Hall is a direct copy of the Coliseum shows how little "C. E." knows of what he is talking about, for either he has never been in the former, or he has never seen an ideal restoration of the latter.

The fact is, that the hall was originally rectangular in plan, then circular, and, lastly, was made elliptical, purely with the intention of accommodating the largest number of spectators, or, rather, hearers, with equal facilities for enjoying the performance.

The ancient amphitheatres had no roofs; the great problem in the Albert Hall was to cover so large an area. The boxes, balcony, and promenade or gallery of the hall, are entirely above the solo singer, and accommodate three-fourths of the audience. More than half of the remaining number are seated in the so-called amphitheatre on a level with the performers, while the flat central floor of the hall is only to seat 900 persons at a level of 6ft. below the solo singer. By preserving a large floor-space—102ft. by 65ft.—in the centre of the building it becomes possible to hold flower-shows and exhibitions, or chamber music and public meetings readily visible or audible to a large number of visitors. The second paragraph of the letter deals with a matter of individual opinion, and as such, coming from the mere initials "C. E.," is valueless. The argument that because we have some ruins of an open building at Rome, erected for wild beast-shows, therefore the erection of a building of a somewhat similar shape for musical purposes in London cannot be called an experiment, is absurd. The promenade or picture-gallery above the staircases and waiting-rooms is, to a certain extent, a structural necessity; and the way in which Colonel Scott has overcome a difficulty by the introduction of an open peristyle (a feature entirely absent in ancient amphitheatres) is, I maintain, one of the most successful points in the design of the building.

I cannot follow "C. E." in his proposals about the organ-chamber, apart from the hall but having free acoustic communication with it; perhaps he is not aware that such conditions could only exist on paper. "C. E." must study the elementary laws of acoustics before he dictates such sweeping measures as the broadside principle; he would then learn that sound travels more readily forwards than sideways, and that he could make himself heard by an infinitely larger audience extending the long way of a given ellipse than he could by addressing them from the short axis of the building. But the most unfortunate mistake of all made by "C. E." is in talking of the approaches to the hall. Probably no modern building, with the exception of the New Opera House at Paris, is so amply provided with accommodation in this respect. Instead of the four entrance-doors he speaks of, we have 22, and the same number of staircases, with 9ft. corridors all round the building at every level. Why, the Coliseum, with its 80 barn (?) doors for 85,000, or, as some say, 100,000 people, was nothing to the Albert Hall with 22 doors for an audience of 10,000. In a notice in the *Times* of Monday last of a concert at the hall on the previous Saturday, special attention was drawn to the fact that an audience of between 8,000 and 9,000 was dispersed in a few minutes. Coming to the final paragraph, I am fairly puzzled what connection it has with the rest of the letter; or what the Society of Arts' *conversazione* has to do with the space in the hall, I cannot for the life of me make out. I can only presume that it has been added with the intention of showing that on some treasured occasion "C. E." has had the rare and undeserved honour of being present at a South Kensington soirèe, and cannot get the remembrance of the august condescension of the "high authorities" out of his head.—I am, &c.,

Gilbert R. Redgrave.

SOCIETY OF ARTS—ART WORKMANSHIP, 1870—71

Sir,—In reference to the letter from Mr. Bassett Keeling, published in your last impression, permit me to say that the entry in the Society of Arts catalogue reads as follows:—"No. 13. Inlay in various woods. 'Our Saviour,' designed by Bassett Keeling, executed by William Claytou, 125, Wardour-street, St. James's, S. W." I think therefore that no blame can be attached to—Yours, &c. The Writer of the Article.

SATURDAY HALF-HOLIDAY.

Sir,—Your correspondent "A. Y. Z." has placed before the profession some very interesting statistics on the matter. That such a state of things can exist in a profession of intelligent men can only be accounted for by the supposition that those who deny their assistants the half-holiday are either old fogies, long past redemption, or a few nobodies from whom we can expect nothing better. Still it is a great pity, I might say a scandal, that the young men in their offices are denied a privilege so universally granted to those in their position. The no-half-holiday men must be very blind, to their own interests even, to continue such a condition of things; and if they think that having done without it themselves therefore their assistants may, it would be interesting to know how much better they would have done with it. And this they might easily know, to some extent, at least, by looking round among their old fellow-pupils, whom they will see do succeed even with a little more leisure.—I am, &c.,

Forward.

Intercommunication.

QUESTIONS.

[2134] REMOVAL OF ROSE TREES.—Will some of your correspondents kindly inform me whether rose trees are legally removable from a garden?—A. S. A.

[2135] WOOD-WORKING.—Can any of your readers kindly inform me of the address of a wood-working firm in Vienna; and if they have an agent in London?—Quercus.

[2136] SOLE CONTRACTS.—I intend to build a villa in Scotland; my architect advises the different parts of the works to be let to separate contractors, assigning as a reason that separate contracts are the most economical, and that he finds the system of sole contracts is not now so generally adopted in England as it was formerly. Can any kind reader who may have experience in these matters, inform me which is the safest way, and whether does the system of separate contracts confer the greatest benefit on the proprietor, architect, or contractor?—A Subscriber.

[2137] FOUNTAINS.—I should feel obliged if any of your subscribers would inform me if there is any book published on the subject of fountains; or if they could give me an idea of the apparatus required to throw a jet of water about 20ft. high?—J. F. S.

[2138] PLUMBERS' WORK.—May I ask an explanation of the following, at p. 152, third column?—"The regulating cisterns of some houses I recently examined leaked in most instances, though they were comparatively new. I found the cause was the valve being flush instead of raised" &c. Although a plumber myself, I must confess my inability to understand properly what is meant from the way it is stated.—P.

[2139] SURVEYORS CHARGES.—Can you or any of your kind readers inform me what surveyors usually charge for surveying and making out schedule of dilapidations or tenantable repairs, without estimate of cost; and also what they charge with estimate of cost?—L. B.

[2140] MARKS ON TIMBER.—I shall be glad if any of your correspondents will reply to the following:—1st, Is there any book published giving all the marks (and their meanings) on different kinds of foreign timber and floor-boards? For instance, what does Λ· H K + C on the ends of white floor-battens signify? 2nd, is there any work describing the various qualities and kinds of timber, and how they may be known?—Aachitectus.

REPLIES.

[2126] PLUMBERS' WORK.—The remarks of "Wiltshire," at p. 154, apply to soldered tacks; that is, to tacks or nails covered with solder; but the query referred to "lead-soldered tacks," consequently, we are as far at sea as ever if the expression "lead-soldered tacks" be correct. —P.

[2126] PLUMBERS' WORK.—Are "soldered dots" synonymous with "lead-soldered tacks" and "lead-headed nails" mooted last week?—F.

[2127] ANCIENT CHURCH ARCHITECTURE.—The best book, considering the great amount of information, number of illustrations, and lowness of price, for a beginner, is the last edition of Rickman's "Gothic Architecture," published by Parker.—P. E. M.

[2128] ISOMETRICAL DRAWING.—"A Treatise on Isometrical Drawing," by T. Sopwith, F.G.S., second edition. Easy and accurate in its application.—M. G.

[2128] ISOMETRICAL DRAWING.—"Cupidus Discendi" will, I think, find W. S. Binns's treatise on "Orthographic and Isometrical Projection" (in two parts), answer all his requirements.—C. W. H.

[2132] CUBING BUILDINGS.—The dimensions for cubing must be from outside to outside laterally, and from bottom of footings to half way up the roof. No deductions are made for floors or aught else inside. The enquirer must bear in mind that cubing can only be relied upon when the relative circumstances are exactly similar. —P. E. M.

[2132]—CUBING BUILDINGS.—"Wiltshire" should take the dimensions externally, and from ground to eaves, cubing the same as a solid block; then cube the roofs, &c., separately, and add their contents. Cellars to ordinary houses, outbuildings, and offices to mansions should be cubed and priced at a lower rate. Porches, bay windows, balconies, and ornamental chimnies; estimate these and add their value to form an approximate only.—W. R. A., Uckfield.

[2132] CUBING BUILDINGS.—Measure externally in all cases, and for heights take from bottom of footings to centre of roof.—F.

[2133] COMPETITIONS.—In the absence of any special circumstances, such rejection would most assuredly be unjustifiable, and more, an adhesion to their decision, *nolens volens*, should be effected. If called on to prescribe, would probably do so thus: Law, strong dose, promptly and vigorously applied; repeat doses until cured.—F.

[2133] COMPETITIONS.—The committee cannot be compelled to employ the assistant, but it is to be hoped they will take a liberal and kind view of the case. It is not of any importance to them the position of the successful competitor, but only whether he is competent to execute the work. If he can show proof of this, they are certainly in honour bound to employ him.—P. E. M.

[2133] COMPETITIONS.—In answer to "T. C.," as a friend, I beg to say, whilst experiencing as he must the most unalloyed gratification at the preference given to his design—the result of many a well-spent hour of "overtime"—although disconcerting if it be not deemed such an one from which the hall can be advantageously built, or if for divers reasons not assigned (for the committee is not bound to state why or wherefore) it be rejected, let him be assured that the fault of his production being only that of an architect's assistant would not influence a committee of gentlemen to refuse the design on that account. Therefore, if an unfavourable decision should be made, let him not be advised by any one to try to enforce its adoption. Let him wait patiently, not be daunted, and hope on! The selection of "T. C.'s" design is a proof of its superiority, and augurs well for the future; and if it does not meet the reward due to its worth now, it cannot fail to help him up another step on the ladder of fame.—W. R. L.

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LAND AND BUILDING SOCIETIES.

Commercial Union Permanent Benefit Building Society.—The first annual meeting of the Commercial Union Permanent Benefit Building Society was held last week. The gross receipts were stated at £12,134, the advances at £8,831, and the realized profit at £1,091, showing, after payment of 5 per cent., a profit carried forward equal to 12 per cent. on the paid-up capital for division next year.

Essex Equitable Permanent Benefit Building and Investment Society.—This society lately held its twenty-third annual meeting at Orsett. The report showed that during the past year 106½ new shares had been entered; that the total receipts amounted to £3,346 15s. 11d.; that £2,831 had been paid to parties withdrawing investments; and that advances to the amount of £438 4s. had been made. The statement of liabilities and assets showed the sum of £7,108 3s. 6d. as the total amount due to investors being holders of paid-up and monthly subscribing shares; whilst the amount due from borrowers is £7,628 6s. 3d., leaving a balance of £520 2s. 9d. in favour of the society.

Waltham Abbey Permanent Benefit Building and Investment Society.—The twenty-third annual meeting of this society was held the other day. From the report presented to the meeting it appears that the society now consists of 353 members, holding collectively 1,137 shares, being an increase of 114½ shares on the number mentioned in the previous report. During the past year 255¾ new shares have been taken up; 129½ have been withdrawn; ten redeemed; 70 advanced; and 2 have been forfeited. The receipts during the year (including loans of £2,400 obtained by the trustees to enable the directors to meet the applications for advances), amount to £12,359 1s. 11d, which, added to the balance of £7 5s. 5d., makes a total of £12,366 7s. 4d.; of this sum £4,209 14s. 1d. has been advanced to aid in the purchase of property; £4,967 2s. 2d. has been paid on the withdrawal of shares; £42 8s. 1d. interest of loans; £2,700 in part payment of loans; and £108 4s. 5d. for other charges, leaving a balance in hand of £331 7s. 10d. The report was unanimously adopted.

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LEGAL INTELLIGENCE.

Infringement of the Metropolitan Building Act.—At the Southwark Police Court, last week, Mr. Joseph Torr, builder, Lawson-street, Dover-road, was summoned for unlawfully erecting a warehouse in S. James-street, Old Kent-road, without giving the required notice to the district surveyor. Mr. Suooke, architect and surveyor, of Tooley-street, stated that he was the district surveyor of the locality where defendant had built extensive warehouses in S. James-street, Old Kent-road. According to the clauses of the Building Act, he should have given witness notice, accompanied with plans; but neglected to do so, and proceeded with the building. The latter was not erected according to law; the walls were not of sufficient thickness for the weight of the roof. Mr. Smith, on the part of Mr. Torr, said he had to apologise to Mr. Snooke for his neglect in not giving him notice. The fact was, he applied to the Metropolitan Board, to whom he sent in his plans, and they gave him a licence (produced). He had consulted with Mr. Byron (who appeared for Mr. Snooke), and he (Mr. Byron) did not wish to carry the case any further against his (Mr. Smith's) client. Mr. Byron said that after such an apology and explanation he was willing to forego any further prosecution in the matter, but as Mr. Torr wilfully infringed the Act of Parliament he must ask for a conviction. Mr. Partridge, the magistrate, after some further remarks, considered that a nominal penalty would be sufficient. Mr. Torr must pay a fine of 5s. and costs.

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Christ Church, Montpelier.—The embellishment of the apse of this church has just been completed by the filling in of the nine lancet lights with coloured glass windows. The pictorial designs of these windows are all taken from New Testament history. The centre light displays the Crucifixion. Messrs. Clayton & Bell, of London, were the manufacturers.

The Sanitary Act in St. Luke's.—The Vestry of S. Luke had enforced this Act in 1866, and as a consequence the fever cases in that parish had diminished as follows, viz. before the Act had been passed there were 766 cases in one year; since the Act, there had been but 207 cases in 1867; 179 in 1868; 174 in 1969; and only 100 in 1870

Our Office Table.

Proposed Mortuary, &c., for Newington.—The Vestry of S. Mary, Newington, has purchased of the London, Chatham, and Dover Railway Company seventeen railway arches, and a piece of land adjoining, for 1,000 years, for the sum of £4,300. The ground and arches are to be utilised for manifold purposes, including the erection of a mortuary, the storage of dust and slop, the establishment of a stone-yard, and, if necessary, for the erection of a temporary small-pox hospital. The arches purchased are those which carry the railway between Manor-place and Penrose-street, Walworth, and the piece of land adjoining is an old disused burying-ground formerly belonging to the old Episcopal Chapel in West-street (now Penrose-street.) The chapel is now carried on by the Unitarian body. The railway company has agreed to make a siding on to the property of the Vestry, so that the dust and slop may be conveyed by rail to brickfields and market gardens down the line.

The Peabody Dwellings for the Poor.—According to the annual statement of the Trustees of the Peabody Donation Fund, the first trust now amounts to £178,733. Five groups of buildings under it, situated at Spitalfields, Islington, Shadwell, Westminster, and Chelsea, afford collectively accommodation for 498 families. The trustees possess a site at Bermondsey, which has not yet been built upon. The second donation of Mr. Peabody, to the amount of £200,000, became available for building purposes in July, 1869, and its accrued interest amounts to £13,918 1s. 7d. To this gift Mr. Peabody added, by his last will and testament, £150,000, but in accordance with the terms of the bequest this latter sum will not be conveyed to the trustees until the year 1873. Under this trust there are now in course of construction sixteen detached blocks of buildings on the premises purchased last year at the southern end of Blackfriars-road, and formerly known as the Magdalen Hospital estate. This property will afford dwellings for upwards of 300 families. The trustees have also a desirable site at Chelsea, situated on Cheyne-walk, near the Cadogan pier, available for future requirements.

Tramways at Newington.—We have on previous occasions referred to the proposed removal of the parish church of S. Mary, Newington, the eastern end of which juts out very awkwardly into Newington Butts, causing an awkward bend and contraction in the road. The Metropolitan Street Tramways Company, having now obtained powers for the construction of a line of tramway from the Elephant and Castle to the junction of the Westminster, Brixton, and Clapham tramways at the Horns', Kennington, the Tramways Company has, with an eye to business, offered to contribute £1,000 towards the removal and rebuilding of the church, upon condition that the Newington Vestry will relieve the Company of certain conditions they are under as regards paving. At the last meeting of the Vestry the offer of the Company was agreed to, and there is reason to believe that a much called-for improvement will be facilitated. We understand that the site of the new church will be on the east side of the Kennington Park-road, nearly opposite Mansion House-street.

Shute's Patent Mitreing Machine.—A new mitreing machine has just been patented by Mr. R. G. Shute, for which several advantages are claimed. It will cut a clean and perfect-fitting mitre. Mouldings of any kind of wood up to 4½in. wide can be made by it, and from the peculiar direction in which the knife cuts, it will mitre Bolection or return mouldings of any pattern without splintering them. Messrs. A. Ransome and Co., of Chelsea, are the sole manufacturers.

Iron as a Deodorizer.—Dr. Voelcker calls attention to the use of spongy iron as a deodorizing material of greater potency than animal charcoal. Sewage water passed through a filter of this substance is completely purified, and this filtered water, after having been kept six months protected from the air, was perfectly sweet, and free from any fungus growth. The spongy iron is obtained by calcining a finely divided iron ore with charcoal. Mr. Spencer, whose name is connected with the discovery of the electrotype, has for some time been advocating the use of a filter of this description. Its power of rendering water beautifully transparent, and apparently free from all organic matter, is its strong recommendation.

A Large Railway Bridge in India.—On New-Year's Day Lord Mayo opened the Goalundo Extension of the Eastern Bengal Railway, which supplies the great missing link in the chain of railway communication between Calcutta and Eastern Bengal. The extension has been for some five years in course of construction, having to cross the Goraie river, the deep and treacherous stream which carries off to the sea the main body of the waters of the Ganges, an obstacle requiring no small labour to overcome. The Goraie Bridge roadway is laid across transverse girders resting on seven pairs of cylinders having to bear the pressure of a volume of water some 90ft. deep, and which have consequently been sunk in the bed of the river for a distance equal to about two-thirds of their height above it. There are eight spans, each about 180ft. long, and seven longitudinal girders on each side, each weighing 160 tons. The extreme length of the bridge is 1,600ft.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Royal Institute of British Architects.* — Annual General Meeting of Members only. 8 p.m.
Society of Engineers.— "On the Machinery and Utensils of a Brewery." By Mr. Thomas Wilkins. 7.30 p.m.
Tuesday.—*Institution of Civil Engineers.*—"On Phonic Coast Fog Signals." By Mr. Alexander Beazeley, M. Inst. C.E. 8 p.m.
Wednesday.—*Society of Arts.*—8 p.m.
Thursday.—*Society for the Encouragement of the Fine Arts.*—Second *Conversazione* of the Season, at the Gallery of the Society of Female Artists, 9, Conduit-street, W. 8.30 p.m.
Friday.— *Architectural Association.* — "On Christian Symbolism." By Mr. G. H. Birch. 7.30 p.m.

Chips.

In order to purchase and work certain improvements in the manufacture of washable wall papers, the Amaranth Paper Staining Company has been formed, with a capital of £30,000 in £1 shares.

A new iron Presbyterian church was opened on Sunday, at Annbank. N.B. The style is Gothic. The building seats 250 persons at a cost of £350.

A new Congregational chapel will be opened on Sunday next at Rock Ferry, near Liverpool. The designs are by Mr. D. Walker.

The laying of a double line of street tramway from the Elephant and Castle to Camberwell-Green will be commenced early in this month.

A company, with a capital of £12,000, in £10 shares, has been formed for supplying the city of Ely with gas.

Timber Trade Review.

Prices 28th February:—Per Petersburg standard.—Quebec pine, 12ft 3 by 11, 1st bright, 19*l* 10*s*; 1st floated, 16*l*; 2nd bright, 14*l* to 14*l* 5*s*; 2nd floated, 12*l*; 2nd dry floated, 12*l* 10*s*; 3rd floated, 9*l*; 3rd dry floated, 9*l* 5*s*; Saguenay 1st bright pine, 3 by 11 to 22in., 20*l*; 3 by 9in., 15*l* 5*s*; 3 by 11 to 21in., 17*l*; Quebec 2nd red pine, 12ft. 3 by 11, 12*l*; Saquenay 2nd red pine, 8*l* 15*s* to 10*l*; Jacobstadt 1st millsawn yellow, 9*l*; Onega 2nd white, 8*l* 10*s*; Gefle mixed yellow, 10*l* 5*s* to 12*l* 5*s*; do 3rd yellow, 8*l* 5*s* to 11*l* 10*s*; do mixed white, 9*l*; Hernosand mixed yellow, 8*l* 10*s* to 9*l* 10*s*; do 3rd yellow, 7*l* 10*s* to 8*l*; do 4th yellow, 7*l*; do mixed white, 7*l*; do 3rd white, 6*l* 5*s*; do 4th white, 5*l* 15*s*; Husum 3rd yellow, 7*l* 15*s* to 9*l* 5*s*; Petersburg 1st white, 8*l* 15*s* to 9*l* 10*s*; Pitea mixed yellow, 6*l* 15*s* to 8*l*; Sundswall mixed yellow, 9*l* 15*s* to 10*l*; do 3rd yellow, 8*l* 10*s* to 8*l* 15*s*; Sannesuna 1st white, 1 by 6in., 4*l* 5*s*; do 3rd white, 2½ by 6½in., 5*l* 10*s*; Uleaborg mixed millsawn yellow, 8*l* 10*s* to 9*l*; Uddevalla 3rd yellow, 8*l* 5*s*. to 8*l* 10*s*; Vefsen millsawn yellow, 6*l* to 8*l*; do millsawn white, 5*l* 5*s* to 7*l* 15*s*; Wifsta Warf 3rd yellow, 7*l* 15*s* to 9*l*; Archangel 2nd yellow, 9*l* 5*s*; Bjorneborg mixed millsawn yellow, 6*l* 15*s* to 7*l*; do mixed millsawn white, 6*l*; do 1st millsawn white, 7*l*; do 1st handsawn white, 6*l* 5*s*.

Per 120 12ft. 3 × 9.—St. John's 1st spruce, 15*l* 5*s* to 15*l* 10*s*; Saquenay 1st spruce, 13*l* 10*s* to 13*l* 15*s*; Quebec 1st spruce, 18*l* 5*s* to 18*l* 10*s*; do 2nd spruce, 14*l*; do 3rd spruce, 13*l* to 13*l* 5*s*.

Flooring, per customary square.—Bjorneborg 1st yellow, ⅞in., 8*s* to 8*s* 3*d*; Gotbenburg 1st yellow, ⅞in., 8s 3*d*; do first white, ⅞in., 7*s* 9*d* to 8*s*; Fredrickstadt mixed white, ⅞in., 7*s*; do 1st white, 1in., 8*s* 9*d* to 9*s*; ⅞in., 8*s* 3*d* to 8*s* 6*d*; do 1st yellow, 1¼in., 13*s* 3*d* to 13*s* 6*d*; 1in., 10*s* to 11*s* 3*d*; ⅞in., 8*s* to 8*s* 3*d*; ¾in., 7*s* 6*d*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Metals.

Lead:—

Pig Foreign	per ton	£17	10	0	£17	12	6
,, English W.B.	do	19	10	0	19	12	6
,, Lead Co.	do	18	12	6	18	15	0
,, Other brands	do	18	0	0	18	5	0
Sheet Milled	do	18	10	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
,, ground in oil	do	0	0	0	0	0	0

Copper:—

British—Cake and Ingot	per ton	£73	0	0	74	0	0
Best Selected	do	75	0	0	75	0	0
Sheet	do	76	0	0	79	0	0
Bottoms	do	80	0	0	81	0	0
Australian	do	73	0	0	75	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	65	10	0	67	0	0
,, Refined ingot	do	71	0	0	72	10	0
Yellow Metal	per lb	0	0	6½	0	0	7¼

Iron:—

Pig i Scotland, cash	per ton	£2	12	10½	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
,, Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	7	6	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	15	0	10	0	0

Timber.

Teak ....load	£12	10	13	10
Quebec, red pine	3	15	4	15
,, yellow pine	4	5	5	0
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	5
,, birch	3	15	5	0
,, elm	4	5	4	15
Dantzic oak	5	5	5	15
,, fir	2	12	4	10
Memel fir	3½	0	4	5
Riga	3	5	3	10
Swedish	2	5	2	15
Masts, Quebec red pine	4	0	5	5
,, yellow pine	4	0	5	5
Lathwood, Dantzic, fm	3	0	5	0
,, St. Petersburg	5	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do	12	15	13	10
Archangel, yellow	11	10	13	10
St. Petersburg, yel.	12	5	13	5

Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
,, white	8	0	8	10
Gefle, yellow	10	10	12	0
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per	s.	d.	s.	d.
sq. of 1in., first yel	7	6	10	6
First white	7	0	9	
Second qualities	6	0	7	
Pumice Stone pr ton	6	0	8	
Oils, &c.				
Seal, pale....per ton	£38	0	0	0
Sperm body	84	0	84	5
Cod	35	10	36	0
Whale, Sth. Sea, pale	36	0	37	0
Olive, Gallipoli	49	10		0
Cocoanut, Cochin, ton	46	0	48	0
Palm, fine	38	10	0	0
Linseed	32	0	0	0
Rapeseed, Eng. pale	45	10	46	0
Cottonseed	28	0	34	10

Trade News.

TENDERS.

Barnet.—For the erection of parsonage house, Lyensdown. Mr. Phillip H. Peters, architect:—

Linzell	£2220
Bird	2148
Scrivener & Stephenson	1900
Pocock	1870
Brown & Sons	1650
Walton	1612

Broadstairs.—For building twelve-room house for Mr. Andrews. Mr. Philips, architect:—

Cowell	£660	0	0
Padget	540	0	0
Hiller	525	0	0
Harrison	490	0	0
Starke	470	0	0
Howlett	425	0	0
Shill	347	12	9
Trayte	338	0	0

P.S.—There is over 15 rod of brickwork alone; how is it to be done for the money?

City-road.—For additional story to S. Matthew's schools, City-road. Mr. Lacy W. Ridge, architect. Quantities by Mr. L. C. Riddett:—

Hill & Sons	£698
Dove Bros.	685
Williams	633
R. E. Roberts	594
Capps & Ritso	584
Scrivener & White	568

City.—For the erection of a paper warehouse in Farringdon-street. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett:—

Axford	£ 375
Adamson & Sons	2340
Scrivener & White	2288
Capps & Ritso	2272
Elkington	2249
Browne & Robinson	2190

East Sheen.—For villa residence at East Sheen (exclusive of stabling). Quantities supplied by Mr. Gandy. Mr. E. Ingress Bell, architect:—

Sharpington & Cole	£2263
Adamson & Sons	2120

Newington.—For additions to national schools S. Mary, Newington, Surrey. Henry Jarvis & Son, architects:—

Brown	£850
Tarrant	827
Marsland & Sons	825
Turner & Son	799
Shepherd	765
Thompson	760

Whitchurch.—For new town-hall and markets, Whitchurch, Shropshire. Mr. Thomas M. Lockwood, architect. Architect's estimate, £5994:—

	Building.		Fittings.			Total.		
Samuel	£7178	0	£378	0	0	£7556	0	0
Meakin & Sons	6887	0	357	10	4	7262	10	4
Orchard	6659	0	400	0	0	7059	0	0
Powell & Co.	6560	0	376	10	0	6936	10	0
Yates	6439	0	312	0	0	6751	0	0
Price	6250	0	350	0	0	6600	0	0
Cobb	5997	0	383	0	0	6380	0	0
Millington & Son	5900	0	352	0	0	6252	0	0
Andrews	5808	18	286	9	0	6095	7	0
Binnian & Son	5685	0	310	0	0	5990	0	0
Reddie	5640	0	349	0	0	5989	0	0
Stringer	5637	6	272	14	0	5910	0	0
Wade Brothers	5400	0	400	0	0	5800	0	0
Burkett	5430	0	313	0	0	5743	0	0

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Sudbury Waterworks, March 4.—Contract No. 4. Construction of a covered service reservoir. Contract No. 5. Supply, laying, and fixing of about five miles of cast-iron water-pipes, with sluice-cocks, hydrants, and other appliances, and some ironwork required for reservoir. Mr. Hennell, 7, Salisbury-street, Adelphi.

Harwich, March 7.—War Department triennial contract for builders's work. Royal Engineer's Office, Colchester.

Ropley (Hants), March 4.—For the erection of a house and offices at Lyewood, Ropley, Hants, for Mr. John Lillywhite. W. H. Hunt, architect, Alresford.

Norwich, March 7.—War department triennial contract for builders' work. Royal Engineer's Office, Colchester.

Hunstanton, March 4.—For the erection of nave and north aisle of new church at St. Edmund's. Frederick Preedy, architect, 13, York-place, Portman-square, London, W.

Maidstone, March 6.—War Department contract for bricklayers', masons', paviors', carpenters', plasterers', slaters', plumbers', smiths', painters', glaziers' and paperhangers', and gasfitters' work. Royal Engineer Office, Chatham.

Hinckley Local Board, March 6.—For the sinking of a bore-hole and well, on the site of their intended waterworks. Samuel Preston, Clerk to the Board, Hinckley, Leicestershire.

Headbourne Worthy, Hants, March 4.—For the erection of a gentleman's residence and stable buildings, at Headbourne Worthy, near Winchester, Hants. John Dolson, St. Swithin's-street, Winchester.

Fawsley (Northamptonshire), March 13.—For the erection of farm buildings. Mr. Waters, Fawsley Estate Office.

Herefordshire, March 7.—Thornbury United School.—For the erection of a school for fifty-four children, with mistress's residence, at Thornbury, three miles and a half from Bromyard. W. West, solicitor, Bromyard.

Colchester, March 7.—War Department triennial contract for builders' work. Royal Engineer's Office, Colchester.

Portsmouth, March 10.—War Department triennial contract for builders' work. Royal Engineer's Office, Portsmouth.

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BANKRUPTS.

(to surrender in london).

Charles Castleman, Westbourne-park-villas, Bayswater, and Kingston, Surrey. timber dealer, March 14, at 11—Samuel Sewell Wilson, Burton-street, Pimlico, builder, March 22, at 12.

(to surrender in the country).

Charles Holman, Kingston-upon-Thames, builder, March 16, at 3—Thomas Pooly, Maidstone, lime merchant, March 10, at 2—John Sturgeon, Bolton, engineer, March 15, at 10—Matthew Henry Tunalsy & John Bland, Manchester, joiners, March 30, at 9·30—Charles Wakelin, Fleckney, Leicestershire, brickmaker, March 10, at 11.

PUBLIC EXAMINATIONS.

March 31, T. Thorogood, Redbourn, Hertfordshire, carpenter—March 9, J. Cropper, Sheffield, plumber—March 8, A. Combes, Tyndale-place, Islington, builder—March 18, H. W. Webster, King's-road, Bedford-row, builder—March 29, T. Cook, Greenwich, engineer—March 15, R. S. Rowlands, Liverpool, iron merchant—March 17, H. J. Ingram, Cheltenham, surveyor.

DECLARATIONS OF DIVIDENDS.

William Moxon, Fulham and New-street, Spring-gardens contractor, 2nd dividend of 5 13-32d., March 1.

DIVIDEND MEETINGS.

March 14, P. M. Parsons, Arthur-street, West City, and Shooter's-hill-road, Kent, civil engineer—March 14, J. Gullett, Chetwynd-road, Kentish-town, builder.

PARTNERSHIPS DISSOLVED.

T. Corless & W. Fox, Horten, Yorkshire, engineers—J., M., & H. Moody, Clydach, Glamorganshire, brick manufacturers—T. Upton & J. Hardaker, Bradford, stone merchants—J. Pattinson & J. Stewart, Workington, Cumberland, masons—W. Wright & J. Whiteley, Sheffield, joiners—R., D., and G. Davies, Lea-bridge, Middlesex, slate merchants.

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THE BUILDING NEWS.

◆

LONDON, FRIDAY, MARCH 10, 1871.

THE ATTEMPTED COUP-D'ETAT AT THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE Members of the Institute, and of the architectural profession generally, will, we are sure, learn with the same regret that we have, that a *coup-d'etat* has been attempted in Conduit-street (we are unable to presage whether it will prove successful or not), the result of which cannot be other than deplorable. The conspirator-in-chief, nay—as it appears, the sole conspirator—is no less a person than the President himself. Some shadowy notice of his proposal was given, it is true, in his opening address at the commencement of the current Session, when he promised that further due intimation should be given of his intentions. No such due notice was, however, our readers will be surprised to hear, vouchsafed either to the Council or the Institute until on Monday evening he disclosed his plot. The propositon, in brief, is that the Honorary Secretaryship for home duties should be at once abolished, that the present paid Assistant Secretary should be raised to the office of Chief (not Honorary) Secretary and Member of Council, to have the sole control and management, under the Council, of the affairs of the Institute, and that the Honorary Secretary for Foreign Correspondence, retained in order that the provisions of the charter might be verbally complied with, should confine himself to the special duties of his post, and consequently be altogether subordinate to the paid secretary. In thus suddenly springing a mine under the feet of the present executive and general body of the Institute, we are bound to consider that the President committed a grave dereliction of duty and abuse of privilege, and acted in a manner the very reverse of courteous to the Institute, the Council, and the present Honoraray Secretaries; and though professedly he has sought the interest of the paid Secretary, a little consideration will shew that this aim he likewise missed.

Surely a step of so vital and revolutionary a character ought to have been submitted in the first instance to the Council, and fairly and fully discussed by them before it was launched before the general body. Again, without doubt it ought not to have been tacked on, as it was, to the fag-end of the notice-paper of a special general meeting, already overburdened with a plethora of important business—in the expectation that the fatigued members at a late hour might fail to see through the insidious nature of the design; and obviously, the Honorary Secretaries, whose posts were so summarily to be dispensed with, ought to have had some apprisal of the manner in which they would be affected by the scheme. Fortunately, although a few too hasty members gave an inconsiderate adhesion to it, the majority wisely required some further time for its consideration; and, as the meeting was adjourned until Monday next for the purpose, we trust they will meet again in a calmer spirit, and view the matter fully in all its bearings.

Before unmasking his battery, the President made a few faint remarks to Mr. Seddon, the Hon. Sec. for Home Duties, deprecating the idea that any personal slight was intended towards himself. No mention of his name, it may be remarked, was made in the opening address alluded to when the outlines of the scheme were first vaguely suggested, although very complimentary language was used towards his colleagues. Mr. Seddon, in reply, said that he would accept the statement, and beg the members to discuss the subject without reference to himself, but upon its own merits, and for the good of the Institute. More he could not well say, as obviously his mouth was closed, and it was not for him to dilate upon the character of the duties of his office, which, in his preamble, the President has declared to be obsolete, or to explain what had been the nature of his services during so many years, as they were now assumed to be useless.

The Hon. Sec. for Foreign Correspondence, Professor Donaldson, Past President, and whose letter will be found in another column, declared that no other course was open to him but to resign office, seeing that it would be thought "honorary without honour" any longer; and expressed his opinion, founded upon a longer experience than that of any other member in the official position referred to, as to the impolicy of the President's proposal.

Since then Mr. Donaldson has sent in his resignation, not only of his official position but of his Fellowship as well; and we deeply regret that one of the founders and best supporters of the Institute should have had reason to feel himself so aggrieved as this step indicates.

Such is a historical sketch of what has taken place at present. The objects and prospects of success of this attempted *coup-d'etat* we are somewhat at a loss to divine.

The President has disavowed all personal consideration in the matter, and we are bound, therefore, to believe him. We are inclined, then, to account thus for the reasons which have led to this extraordinary conduct on his part. On taking office, he deprecated, with expressions of humility for which we give him credit, that the choice of the members had fallen upon himself, as one whose position in the profession did not of itself entitle him to hold it. Certainly we agreed with him on that point; but looking to the parallel case of the Presidentship of the Royal Academy, we thought he possessed many qualifications that might render him fit for the office. He promised, however, that by his diligence to the duties of the Presidentship he would endeavour to do justice to the selection that had fallen on him. In this anxiety to be active there was, as it has proved, much danger. The President should be, no doubt, if possible, a professional man; but, whether or no, his position should be such as of itself to confer dignity upon the post; and such being the case, it is not necessary for him always to be in the chair. On the contrary, it is far better he should not be present too often, otherwise the Vice-Presidentships become merely ornamental nullities, and may in their turn come to be voted unnecessary.

The activity, however, which Mr. Wyatt has imposed upon himself has led him to be ambitious. He would needs be dictator, with a deferential Council, perhaps, but without any other official than himself to originate measures; and a paid secretary to him in this capacity is all that he conceives to be wanted. This ambition further would lead him to achieve the reputation of statesmanship. Alas! that with the recent foreign political *fiasco* to warn him, he should have fallen into a similar snare. But we have said that the very person sought to be benefitted would be rather injured by the movement set on foot in his favour than otherwise.

The purpose of the Hon. Secretaryship is that one Fellow annually elected, and therefore easily removable, should hold office long enough, if his policy be approved, to guide in matters of business a Council composed of ever-varying members, as well as a President, occasionally in the chair, in reasonable rotation with the Vice-Presidents.

An Hon. Secretary is supposed to have a policy, and Mr. Seddon has often avowed his; but a paid secretary, if he would keep his salary, would abstain from one, and not seek to lead the Council; and this Mr. Eastlake has hitherto wisely done. We fancy the uncertainty of a position, salaried, yet dependent by charter upon annual election, and the caprices of what often have proved small, unrepresentative, and party-spirited meetings, will prove but an embarrassing compensation for increased hours. And a paid secretary may find the policy that will be expected of him—at least under a less active President—rather an awkward acquisition.

At the same time, while we think the proposal an undesirable one on behalf of Mr. Eastlake himself, we cannot but think that he might be addressed as Secretary in future instead of Assistant-Secretary—a term which from the first we objected to—although the present injudicious movement may show that it was not adopted without some foresight, and may have had more reason in its favour than we discovered. In conclusion, we own *coups d'etat* are usually condoned if successful, and it may be that we should be wrong in assuming that Mr. Wyatt has in this case reckoned without his host; yet we have a shrewd suspicion that such will prove to be the case.

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VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."*

I.

IT is seventeen years ago since the first volume of this recently-completed work first made its appearance. It is a work which forms an enduring monument to the author. Replete with reflections, demonstrating great archæological research, and exhibiting a profound knowledge, both with the theory and the practice of his profession, its completion marks an important epoch in art literature. Very rarely has it been given to one man unaided to fulfil such a task, and the industry and perseverence exhibited here are overwhelming. Ten volumes, extending over 5,000 pages of well thought-out matter, show how enthusiastic and how zealous in his work M. le Duc must have been; and when to this we add the charge of an extensive practice and the publication of those admirable works "Le Dictionnaire raisonné du Mobilier Française," his "Entretieur sur l'architecture," and innumerable brochures, we are amazed, not only that M. le Duc should have done so much, but also that it all should be done so well. Only those who have attempted to write upon such subjects can appreciate the enormous labour of research for materials, the constant and unexpected cropping up of new illustrations which revise—nay, not unfrequently change—an opinion partly formed, and which necessitate a recasting of much already done, can appreciate the work at its full value; indeed, the first words of the first volume inform us that it is the result of five-and-twenty years of previous study. Sure we are that what remains is the precious ore extracted from an enormous mass of crude facts accumulated by patient labour, carefully sifted, sorted, and arranged, and now presented to us a most perfect sample. As an illustration of how great M. le Duc's task has been, let us look at what the aggregate labour of a band—too small a band—of English architects has done. We find the "Dictionary of Architecture" yet incomplete. Many years have run since it was commenced; it is as yet not half finished, and, though good in itself, it is by far less complete, less erudite, and less reflective than this one of the many works of M. le Duc. Add, if you will, the other works on architecture published by any half-dozen of our leading architects, and the aggregated brain-work is dwarfed by the colossal labour of their French confrere. M. le Duc is a giant—he is Argus and Briareus. Will he forgive us for seeking in Pagan fable for this illustration of strength, observation, and labour? His work to us seems so superhuman that we are driven into the dim unrestricted region of myth to find a fitting comparison. Now although the particular work the title of which heads our chapter is undoubtedly well known to many of our readers, there are many—we fear too many—who, from its being written in French, are unacquainted with its text ; and then, alas, too many to whom its price will render its possession impossible. For the benefit of those, we propose to take a somewhat extensive review of it. We shall treat it volume by volume, giving occasionally some reproductions of those beautifully-executed woodcuts which enrich its pages, and for which alone we much fear it is too frequently sought. Often do we see the architectural detail illustrated in it reproduced in the work of our ci-devant Gothicists in utter opposition to the principles inculcated in the text. Such possessors of this excellent work profane it by such treatment ; they have not art enough to steal deftly, and when convicted should be doubly punished ; the crime and the blunder both merit such a reward. All such should inscribe over the door of their study, if they use one, these words from the preface of that book they thus abuse—"If we build a new edifice it should serve as a language, to express our thoughts, but not to repeat what others have said." It is well to study carefully M. le Duc's preface—careless readers never study prefaces ; if they only had to write one they would know how much is packed into how little there ; but as no architect has yet invented an illustrated preface, those who only look upon architectural books as marine-store-shops for odds and ends of stolen goods pay no attention to these—and thus, we fear, M. le Duc's preface is almost unknown. We wish that our space would let us reproduce it entire ; as it is, we must only glance at this porch-way, and note some few of the lessons which are taught us on the very threshold.

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* Dictionnaire raisonné de l'architecture Françaîse du XI. au XVI. Siecle, par M. Viollet le Duc, architecte du Gouvernment, Inspecteur-général des Edifices Diocesains. 10 vols.; 8vo: Morel, Paris, 1854—1868.

In this preface our author tells us that after having undergone the two years' regulation wandering and desultory study in Italy, he returned to France, and though he in some measure before appreciated the edifices of his own country, he was more and more struck with the aspect of them, with the wisdom and science which had presided over their execution, and the unity and harmony of method followed in their execution and their ornamentation. Already distinguished men had paved the way to their study, lighted on their road by the works and admiration of their neighbours the English. They dreamt of classifying edifices by styles and epochs ; they did not follow texts, for the most part erroneous, but they admitted an archæological classification based upon the observation of the monuments themselves. The first works of M. De Caumont brought to light the well-marked characteristics of the architecture of Northern France. In 1851, M. Vitet addressed to the Minister of the Interior a report upon the monuments of the departments of the Oise, the Aisne, the Nord, the Marne, and the Pas du Calais, in which this elegant writer drew the attention of the Government to the unknown treasures which were at their very doors. Still later, M. Merrimée followed out the researches so happily commenced by M. Vitet, and wandering over all the ancient provinces of France, saved from ruin numbers of edifices which no one then cared for, and which form to-day the riches and the pride of the towns which possess them. M. Didron expounded the painted and the sculptured poems which covered the cathedrals, and drove away those vandals who would destroy them. "But—and we say it to our shame—our artists remained behind, and our architects rushed off to Italy, never opening their eyes until they reached Genoa or Florence, and came back with portfolios filled with sketches made without criticism and without order. They set to work at once, without ever having set foot on an architectural monument in their own country." Such is the brief history of the rise of the "Gothic mind" in France. There, too, we see that painting and architecture were the last arts to receive the impression of the time. They were not vernacular arts, and we much fear that it is the same now-a days. If we regard the origin of this feeling in our own country, we shall see that it paseed through the same phase. Horace Walpole and Sir Walter Scott initiated the study of Mediæval art ; Chippendale made eccentric furniture ; and Rickman, a quaker linendraper, classified our ancient buildings under a titling of inexact nomenclature ; but our architects studied Taylor and Cresy, were learned in Stuart and Revett, and the buildings of our own country were left equally disregarded. Then arose Pugin, a foreigner, and, therefore, an appreciator of English art ; and, last of all, when Pugin found patrons, and his son became successful, our architects awoke to the fact that it paid, and studied it a little also. English art has, however, found no such exponents as has French art. Even yet we have no rudiments of archæology published in an inexpensive form for the use of schools ; yet the admirable "Abetcedaire d'Archæologe" of M. de Caumont bears date 1850, and has passed through many editions. It is true the works of Pugin, Britton, Sharpe, and Bowman have nobly illustrated many of our finest Mediæval buildings, but they are dry lines only without clothing—no reasonable text relating to the theory and practice of architecture as an art. Picturesque delineation and romancing histories of our old buildings filled our bookcases, and were mistranslated into stucco and novels accordingly. The west front of York Minster was boiled down to the elevation of a Dissenting chapel, its beauties and its teachings evaporated, and a bleached and tasteless extract served up. Our old churches and cathedrals are "restored" out of knowledge and destroyed at five per cent. ; and our architects rush off to France, to Italy, to Germany, bringing back neat volumes of closely-drawn lithographs, which are subscribed for at a high price, and afterwards tried to be sold at a little one ; but careful investigating study of our own Mediæval architecture has, as yet, found little or no place in the profession. Let us listen to M. le Duc ; let us hear how he set about to study the home treasures with which he was surrounded. "In the work which we publish to-day we have essayed not only to give numerous examples of the diverse forms adopted by Mediæval architecture, according to a chronological order, but we have, above all, striven to make known the reasons why it assumed these forms—the principles which led to their adoption. To us it appears difficult to record the successive transformations of the arts of architecture without giving at the same time a sketch of the civilization which enveloped them, and if the task should be found too great for us we shall have at least done pioneers' duty for our successors; as for us, we cannot study the garment without considering the man who wears it." Alas! what a lot of tailors there are amongst architects now-a-days. But our master is speaking, so we will be quiet. Listen ! "Now all sympathy for this or that form of art put aside, we have been struck with the complete harmony which exists between the arts of the middle ages and the spirit of the peoples in whose midst they have developed themselves. From the moment when Mediæval civilization found itself living and organized, it progressed rapidly." "It is not to-day only that western Christianity has inscribed on its flag the word—Progress. Who speaks of progress speaks of labour, of struggle, and of transformation." That is a truly philosophical view of the records of a nation's history by its arts, but unfortunately the converse does not hold good. We have struggling, and labour, and transformation enough and to spare in art, and especially in architecture now ; but unfortunately it is against, not for the spirit of the time, and progress is not the result. Do "Gothic" theatres and law courts, Renaissance tabernacles, and torturing brick churches of no style, expressive of no sentiment, mark progress ? Do girder bridges or cast-iron arched ones mark progress? Do buildings which show how many books a man has on his library shelves, and how few brains he has in his head, show much progress? Alas no ! Until common sense rules, until common wants are expressed in a common language, we shall have no progress, and the architecture of this day can create but a valley of dry bones so long as it borrows these bones only from the past. It props up the dead body, but it instils no life ; it studies consequence only, and disregards the cause, and for this reason it has ceased to be an art, and degenerated into a trade with 5 per cent. profit and a discount off. So far it certainly represents the commercial spirit of the age, and thus far it is true. But is that a fine art ? In reviewing M. le Duc's account of the duties of an ancient architect, we shall have to speak further on this point, so at present we will say no more. We regret we cannot agree with him in his contrast between the ancient civilization, and that of the epoch he treats of. Like most enthusiasts, he can only see one side of the question ; he sums up the difference between the two by calling the former absorbent and the latter expansive. To our minds like causes produce like effects, and to a certain point each phase of art has trodden parallel paths ; each has its absorbing, each its expanding time, as the political and social history of its time varied ; and the arguments in favour of any one particular phase of art expression is equally applicable to a correlative period in the course of the other. Absorption is simply taking in food for expansion, and when any style of art has ceased to absorb the feelings of its time, if it does not expand it withers away and dies.

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LINCOLN'S INN.

A CORRESPONDENCE has lately been going on in the *Times* respecting Lincoln's Inn and Lincoln's Inn-gardens. "A Junior of Twenty Years' Standing" opened the ball by announcing that a new set of chambers is to be erected in the garden of Lincoln's Inn. The veteran junior says that these chambers will be too far from the New Law Courts to be convenient for barristers, and he intimates that if the recommendations of the Judicial Commission are adopted there will be local courts, and the courts of appeal only will sit in London. "A Bencher," in reply, says that "the Bench have not resolved to build the chambers in the garden," and that the hoarding was put up "to enable us to gather opinions as to the alleged expediency of so sacrificing the garden to meet the alleged want of chambers, and to enable us quickly to rebuild the almost ruinous 'Old-buildings.'" The *Law Journal* thinks this answer of the Bencher fully justifies the warning of the Junior. In the case of bricks and mortar, it says, the first step, though experimental, is too often the beginning of the costly and ruinous end. Putting up the hoarding to try the effect is an ominous proceeding, and a word of caution is not out of season. No doubt there is a great demand for chambers, and the Benchers ought to do what they can to meet it. We should have thought that Old-buildings might be gradually rebuilt without the prior erection of new chambers. In these days building work is done quickly, and barristers might be content with chambers out of bounds during the time of rebuilding. We trust that, whatever decision is arrived at, the garden will not be spoilt by the erection of a new set of chambers, and that the hoarding will be speedily removed.

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On dit Sir Robert Peel has sold the valuable collection of pictures, chiefly Dutch and Flemish, which his father spent so many years in accumulating, but which he himself does not profess to have especially admired. It has been purchased by the Trustees of the National Gallery for a sum of £75,000.

THE PATENT LAWS.

NOT fewer than three Bills are before Parliament proposing to modify or abolish the Patent Laws. The cry for repeal has, for many years, come from the same quarter, and it is still contended that the abolition of patents would conduce to the advancement of arts and sciences. On the other hand, it is urged that this would put a deadlock upon the genius of invention. Now, between these two extremes, may we not find a middle term, as in logic? And, if not a middle term, then we are forced back upon the principle of patents. There are economists who protest against "property in ideas;" who would disendow the human mind; who would treat the contriver of a new machine as the Americans treat the author of an English book—thank him for his production—and steal it. A patent is granted for the mode, easier and cheaper than other modes, of achieving a particular result. It is as much the individual's property as an artist's picture or a scholar's book. Take the method of boiling; you cannot patent heat, but you can patent the means of applying it. It is to the parts employed in working out the discovery that the Act of Parliament affords protection. When Mr. Smith patented the screw propeller he did not become possessed of the sole right to the idea of propulsion by means of a screw; other inventors obtained patents for varying patterns. So with the paddle-wheel. The feathering superseded the fixed float, and no legal privilege was infringed. But the extinguishing of this privilege would be the deadening of independent ingenuity. Who cares to work without a reward?—Who, especially among the poor, whose dreams, while they ply at their striving labour, are of reputation and success? As well might men publish books without copyright. An invention is not a commodity which can be produced at will. If we wish to have bread to eat we must till the ground; if we have corn to grind we must send it to the miller; we must sow the seed, reap the harvest, separate the wheat from the chaff, convert the grain into flour, and the flour into dough, and the dough into rolls and loaves; and we have the needful substance on our tables. But we are bound to think of the miller and his men. For centuries, dating from beyond Chaucer, they toiled in an atmosphere made unwholesome by the cloud from the grinding grain. Then stepped in the inventor, Bovill. He had devised a plan for increasing the efficiency of the millstones, while subduing the mealy dust. He patented it. But what the outcry? Exactly that which greeted Christopher Columbus when he had found out a new world. Anybody might have done it. Each miller could have made the discovery for himself "in process of time." But the process of time is a long one, occasionally. Three-fourths of the millers in England, for many years, neglected Bovill's improvements, as three-fourths of the engineers despised Watt's modifications of the steam engine. An eminent lawyer recently said—and it was a surprising thing for him to say—that all inventions will be made, some day or another, even if the patent laws are abolished. This we can neither disprove nor accept without qualification. The qualification is that Patent Laws are good, not merely because the direct influence they have in the stimulating of invention, nor even that they act, in a manner, as premiums upon ingenuity, but because, when the State has to deal with the demands of inventors, and has to take into account the interests of every section of the community, patent laws offer the most equitable arrangement for satisfying rival claims, while protecting the meritorious from pillage and ruin. It is urged that the laws of nature are common property. But is a peculiar insight into these laws common property? We do not suppose that Newton ever thought of patenting his law of gravity, or that a mathematician who squared the circle would register his triumph at the South Kensington Museum. Still, in our day, thousands upon thousands of discoveries, useful in their way, are the productions of poor men's thought, who cannot afford to give their time to enrich "the general fund of the world's wisdom." They do not ask for a perpetual prerogative of royalty in a screw propeller, an hydraulic press, a steam engine, or an electric telegraph; they want, in plain language, to gather in the first fruits of their intellectual industry; and they have a right to it. Why should the dull and indolent profit freely by the exertions of the acute and pertinacious? Where, under those circumstances, would be the natural human motive for exceptional effort? It is very easy to talk about the sacrifice of a few to the general good; yet where would the few be found unless they felt an incentive? It has been wisely written there is in reality no great and continuous labour undertaken without some stimulus of a more special and personal kind than the self-satisfaction of contributing to the enjoyment or profit of our mortal race. We all denounce when a great inventor dies unrewarded. He has been looking keenly into the laws of nature; he has learned something of which we, hitherto, have been ignorant; he has won in a race for which many have started; and, forsooth, he is to be denied the prize because others might equally easily have won it! For our own part, we can perceive no tangible distinction between copyright in a book and copyright in a mechanical or scientific invention—setting aside discoveries in surgery and medicine, the disclosure of which is immediatly due to all mankind. We cannot distinguish between the author of a work on the screw-propeller and the author of the screw-propeller itself. The book is a creation, and the novelty it treats of is an invention also; and why should not both be a protected? The history of discovery is a history of surprises. We do not say that Patent Laws are never abused. They are put in force for un-meriterious quackeries, and for copies of old specifications. But these abuses, upon the whole, correct themselves. There is no virtue in the words "by royal letters patent" which can permanently mislead the public. If these words were legally affixed to machines constructed to produce perpetual motion they would hardly suffice to overcome those drawbacks due to friction and gravitation which have always hindered such engines from working so well in practice as they do on paper. Patents, justly understood, are the finger-posts of progress. They are granted upon exactly the same principle as that which created our Indian and North American Empires. They are related to the spirit of monopoly, no doubt; but is not every man's private estate a monopoly? Is not every man's personal genius a monopoly? Was not Sir Walter Scott—was not our Charles Dickens a monopolist, in the most exclusive sense of the term? There is nothing in common between these particular prerogatives and, for example, the infamous monopolies created by Queen Elizabeth. The sovereign has no longer any power to bestow these rights. If they are falsely claimed, they can be cancelled; if they are grossly absurd, so as to include, at once, the propelling of ships, the making of shoes, and the cutting of turnips, they are, no matter what fees are paid, null and void. Still, we admit an injustice and a difficulty. Men who can really invent nothing, may be able to suggest a slight improvement, actually suggested by some other man's work, the work of an original and fertile brain. Here the patents compete unfairly: the greater gives way to the less. If a man discovers the effect of the actinic rays of light on nitrate of silver he becomes master of a new idea, and may, by publishing his discovery, make the public share in his knowledge. Another individual takes advantage of it, and produces a picture on a piece of glass or a sheet of paper. Or the the one finds a bed of iron-stone or a seam of coal, while the other contrives an apparatus for smelting. Which should be the patentee? Which should possess property in the idea? Clearly the one who can practically apply it. The discoverer enlarges our knowledge; the inventor increases our power; and the whole case stands this way: some manufacturers complain that they are hampered by patents, that they know not what to do lest they should infringe the rights of some monopolists, whom they cannot compel, under any royalty, to grant a licence for making their apparatus or employing their process. Against all this we have only to plead again that industry and ingenuity must have their inducements and their rewards.

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ROAD-SCRAPINGS *v.* "HOGGIN."

THE enormous cost of keeping in repair the many hundreds of miles of roadway comprised within the metropolitan area renders it necessary that the greatest economy, consistent with efficiency, should be exercised by the surveyors to the various vestries. In the streets subject to a heavy traffic a sharp contest has for some time been going on between asphalte and granite "setts;" but whichever of these two methods of paving is found, after thorough trials of each under all conceivable circumstances, to be the most suited for what we may call "city" traffic, we suppose that in the long lines of road abounding in the suburbs, granite, macadam, and flint roads will still hold their own, especially now that the steam-roller is beginning to be more widely appreciated by those slow-to-move bodies the vestries. With the aid of the steam roller a macadamised road may now be made smooth, hard, and infinitely more durable than when cart and omnibus wheels and horses' feet are made to do what should be done by the roller. But the old method not only entails cruelty to animals, it takes more money from the pockets of the ratepayers; for roads made in such a barbarous fashion always wear very quickly into innumerable holes, and require "mending" incessantly. By using the steam roller the cost, though perhaps greater at the outset, is less in the long run, for steam-rolled roads wear smoothly and evenly, and require little attention.

In the use of the steam-roller it is found advisable to use "hoggin," a sort of sand or fine gravel, as a binding material, and it has been more than once suggested that the scrapings of the roads, especially of those made of flints, could be profitably used as "hoggin." We are glad to see that at the last meeting of the St. George's, Hanover-square, Committee of Works, the surveyor (Mr. Tomkins) reported that he had made inquiries as to the means of disposal of the road sweepings in the various metropolitan parishes, and as to a suitable site for the storage of a portion of the road scrapings to be used in place of "hoggin." He had written to every road surveyor in London, asking two questions—1st "How do you dispose of your road sweepings?" and, 2nd, "Have you used any portion as a substitute for "hoggin," and, if so, with what result?" He had received answers from thirty-one surveyors, of which he gave a summary. Twenty-six stated that they disposed of the sweepings by contract, the contractor being paid for their removal. Eleven stated that they had used road scrapings instead of "hoggin" with good results. They did not, however, specify whether from granite or flint roads. Five stated that they had used scrapings from flint roads only. Four had never used them. Three consider them useless. Two consider that they should be used with caution. Three preferred "hoggin." Four sold their scrapings for manure. There was, therefore, a large majority in favour of the use of road-scrapings as a substitute for "hoggin," and his opinion was favourable to their being so used, while at the same time he fully agreed that it should be done with caution. To obtain good results they should be used when the weather was dry. He was of opinion that only flint scrapings should be used. Granite scrapings consisted of a fine powder, containing a large percentage of organic matter, whilst flint scrapings consisted of loamy grit containing a much smaller percentage of organic matter.

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A new town-hall is to be built at Madras. The Vizianagram gives £1,000 towards it.

SUN-BURNERS.

(*Concluded from p.* 141.)

THE next point to be attempted in order to render the sun-burner better adapted for universal domestic use is to reduce the heat given out by the lamp itself. The larger jet at a lower pressure will somewhat help this, and the shape of the elongated case, and consequently larger air space between the light and the atmosphere of the room, will still more materially assist, but the most certain aid will be in a more thorough and extensive ventilation of the ceiling of the room itself. As rooms are now usually built, ventilation other than that afforded by the fireplace (often closed with a register) and the occasionally opened window is rarely attempted, and spite of all that has been written, said, and done, architects and builders still go on in the same unscientific, unreasoning way, and build walls for warmth and glazed apertures for light, and let fresh pure air—the first essential of comfort—take its chance. In a former paper, a simple addition in the ordinary manner of constructing a drop-light window frame was pointed out (see the Building News for December 23rd, 1870, p. 459), and which at such times as the crowded state of the room rendered the heat more than usually intolerable, might afford a most grateful relief; but in addition to this, in contriving for the introduction of a sun-burner, and indeed for the use of any other artificial light, an ever-acting escape of heated air must be provided as the very first essential. To do this, the very source of the trouble—the heat from combustion of the gas itself—can be used as the motive power of cure. In all flues intended to carry off heated air into the colder external atmosphere, the great obstacle is the down-draught; and numerous as are the appliances in shape of valves and chimney terminals to remove this, scarcely any one of them is certain or satisfactory. It should, perhaps, be stated that the American pattern known as Emerson's ventilator, which is simple and scientific in its primary principle, is the most effective apparatus for the purpose of an external wind-guard, and as it is probably but little known here, its form and action may be briefly described with practical advantage. It consists first of a base or wind-box above the roof, of any suitable size, provided that the square of it be larger than the diameter of the shaft or flue, and its height not less than one diameter. From this rises the shaft, of not less than five diameters, and at top of this is a truncated cone formed by a sloping rim pointing downwards at an angle of 45°, and with a perpendicular height equal to one diameter. The space between the lower edge of the rim and the shaft is filled in with a disc of sheet iron, leaving the form of the cap so far that of a truncated cone. At the height of one diameter from the open top (which is of course the top of the tube or shaft itself) is a circular flat of stout zinc or iron exactly the size of the base of the cone; this is supported upon any sufficient number of metal rods rising from the lower edge of the cone, and is simply to protect the mouth of the flue from rain or direct down-current. The action depends upon the movement of the atmospheric wave across the top of the opening, and with the very slightest movement (which above a roof is almost invariably present) a vacuum is created in the upper part of the shaft, and consequently an upward direction is given to the flow of the column of air within the flue itself.

With such a terminal as this the escape of heated air from the gas flue will be assisted, but it will not always and under every condition of the atmosphere be a perfect result; to ensure a constantly satisfactory ventilation something more must be done, and provided that the flues are of proper capacity, are smoothly finished internally, avoiding as far as possible abrupt angles, and are kept secure from external chill by being cased (when of metal) on their points of exit above the roof, the following plan will be found to answer: Divide the whole of the flues, from their commencement immediately above the burner to their discharge into the air-chest under the chimney terminal, into two equal parts by a diaphragm partition extending the entire height of the flue. The precise explanation of the law which governs the action of this very simple arrangement can scarcely be clearly made, but its efficacy is undoubted, and any one may convince himself of its truth by a simple but conclusive experiment. Light a piece of thin paper and drop it into a wide-mouthed, dry, and empty glass bottle (a water bottle for instance); have ready a strip of thin card-board or stiff paper that has previously been cut to exactly fit the neck of the bottle, and when the flame is just upon point of expiring in the vitiated air of the bottle, insert this card, and at once the flame will return to its pristine brilliancy and continue until the paper is burnt out. The deduction from this fact is that there are opposing currents in every enclosed column of air, and the card acts as a partition to divide them, admitting on the one hand of the upward escape of the foul super-heated air, and on the other of the downward stream of fresh pure air to feed combustion. That there are upward and downward currents of air in ordinary smoke-flues, chimney-doctors no doubt have some experience, but no one yet seems to have attempted an easy and probably always certain mode of preventing what are called smoky chimueys, by building flues sufficiently large to admit of division by a thin metal or ceramic partition into equal parts throughout their entire length. A sun-burner having a flue so made would possess advantages so decided that the additional expense (naturally capable of appreciable reduction as the apparatus became in more general use) would not be considered objectionable by most purchasers or occupants of a comfortable dwelling.

It will thus be seen that many changes have been made in the apparatus since its first introduction to the public, but no marked improvements have been made in any other than the large machines suited to club-houses, theatres, and the like; the small globe-light for ordinary domestic use remains as ugly and clumsy in form as when first introduced. It is somewhat remarkable, by the way, to observe how uniformly clumsy glass globes of English make are compared with foreign; our glass-blowers invariably flatten them at the poles, whereas a French or Belgian workman gives them another swing or two so as to slightly elongate the apex—in this respect unconsciously following the well-known practice of early Greek art-workers, who corrected the optical defects of outlines by just such a divergence as brought the object back to the form intended to be seen. Occasionally an oval has been substituted, but seemingly the gooseberry has been taken for a model, and its poles are as oblate as the globes; probably a bell-shaped form, filled at bottom with a flattened curve cut as a star, would be found pleasing and convenient.

There are no interesting examples of specially decorated ceilings in rooms or buildings lighted by sunburners. On a flat surface, the objection made to them was at first the shadow cast from the bulky tube and heavy frame of the apparatus; but since the introduction by Messrs. Strode of glass and mica into their manufacture, its force has been materially lessened. The form of the burner itself has been improved, and decoration has been introduced; but there are at this present time no examples of an attempt to utilize the brilliant light thereby obtainable as a means of producing legitimate effect. The first point that occurs is the fact of the luminous area immediately around the burner; this could be turned to good advantage by introducting flat decorations iu pure masses of light tints relieved by finer lines or portions of positive colours upon a gold ground, repeating the leading characteristics of the design upon the outer boundary of the ceiling near the cornice, and filling the rest of the surface with such neutral tints relieved with diaper, floral divisions, bands, or other carefully arranged designs, as would not prominently catch the eye; making, in short, the burner, with its intense briliancy, the central feature of the composition. In domicular or coved ceilings, the modes of treatment do not seem so difficult, and generally radiating bands of marked design and colour starting from a harmonious centre, and united by similarly disposed designs in the coving or cornice, would be found an effective and agreeable system of decoration. Occasionally the sun-burner may be turned to advantage for the illumination of perpendicular decorations, as in the lunettes under the voussoirs of coved ceilings; for instance, those under the dome of the Gaiety Theatre, which have been so artistically embellished by the designs of Mr. Marks, and for panelled compartments of a frieze; and when the architectural decorations of the building are thus arranged, the position of the source of artificial light lends valuable aid.

The ceiling itself is, however, the natural surface for decorative display; and bearing in mind the necessity of keeping all embellishment subordinate to the overwhelming brilliancy of the central object, an artist should have no difficulty in treating it effectively. There are but two modes of treating a flat surface high over head; one, by making a mass of minute details so evenly balanced as to give the effect of a rich simplicity equal in one sense to that obtained by a general tint; the other, to draw the eye by lines, and bands, and groupings of embellishment, to culminate at last in one great mass of decoration; the sun-burner imperativeiy demands the latter.

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REMARKS ON SIR CHRISTOPHER WREN'S CHURCHES.*

THE churches of Wren are almost invariably on the Roman model; wherever the forms of the Pointed style are attempted they are treated in a dead and lifeless manner, and show that the author had an ill-concealed contempt for the Mediæval churches, which he never condescended to study. Previous to the Great Fire, he wa consulted as to the reparation of Old S. Paul's, and in a report which he made as Assistan Surveyor-General he says:—"It will be as eas to perform the work after a good Roman manner as to follow the rudeness of the old design.' Look at S. Michael's, Cornhill—professedly de signed after the noble chapel tower at Magdale College, Oxford; how thoroughly Wren ha succeeded in depriving his imitation of any par of the life and beauty of the original. Look at St. Dunstan's-in-the-East; what a curious ad mixture of the Gothic form with Roman details and how feeble the result. Look at the wester towers of Westminster, requiring no criticis from me before an educated audience.

The plans of the various churches erected b Wren were simple and uniform when the form o the site permitted; and when, as was frequentl the case, the peculiarities of the ground and th angularity of the streets rendered it necessar it is interesting to observe the ingenuity wit which Wren accepted the difficulties and solve the problem. This is emphatically observable i S. Benetfink, Threadneedle-street, where the in terior polygonal shape, conforming to th boundaries of the site, has been treated in a mo masterly manner. But where practicable th plans of his churches were simple. The princip he laid down is stated in a letter to a frie which he wrote in 1708, respecting S. James' Westminster, which he thought one of his be works. In this letter he says:—"The churche therefore, should be large, but still in our R formed religion it should seem vain to make parish church larger than that all who are p sent can both hear and see." "The Romanis indeed," he goes on to say, may build larg churches; it is enough if they hear the murm of the Mass and see the Elevation of the Host, ours are to be fitted for auditories." For breadth and simplicity of arrangement, and as realising this leading principle, I may refer to S. James's, Piccadilly, S. Andrew's, Holborn, S. Clement Dane, Strand, S. Lawrence, Jewry, and S. Bride's, Fleet-street.

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* By F. J. Francis, F.R.I B.A. Read before the Ar tectural Association on the 24th ult.

But passing from the plans and considering the outline of his churches, I hope I shall not be considered guilty of any impertinence towards this eminent man if I say they possess in this respect very few claims to admiration. The most observable feature is that in the majority of cases the exterior is subservient to the interior. The confined nature of the sites on which these London churches were built rendered the architect comparatively indifferent to the form and outline of their elevation, and induced him to throw all his skill and energy into their interiors. The beauty of some of these is only equalled by the contrasted ugliness of the exteriors ; and there is many a form which satisfies the eye when you enter the church which has been achieved at the expense of external beauty, and which results in a most uncouth exterior. In proof of this I may refer to S. Mary-le-Bow, Cheapside, S. Stephen's, Walbrook, and S. James's, Piccadilly, where the architectural critic will find abundant proof of what I am stating. The most unsatisfactory features in Wren's churches are the windows. They are tasteless, exhibiting no variety of design—mere miserable gaps in the masonry, glazed in the most ordinary manner. The campaniles have been variously estimated, according to the predilections of the critic, but setting aside the far famed steeples of Bow Church and S. Bride's—the former of which has considerable claims to intrinsic beauty—the remainder of his towers are either square and massive, without relief or variety of design, frivolous in conception, as at S. Stephens's, Walbrook, or the mere piling of order upon order in incongruous ingenuity, as is observable in Christ Church, Newgate-street, and S. Clement Danes. I ought to add that in the interior outlines of many of his churches he was, owing to his scientific knowledge of carpentry, especially successful. The absence of any tie-beam across his larger structures, and where there is a triple division into nave and aisles, is very skilfully compensated for by the triangular construction, bringing the main support upon the nave columns, and thus counteracting the lateral thrust. This arrangement left him free to throw waggon-headed ceilings over the main body of the fabric, added to the height, and considerably augmented the internal grandeur of effect. Some of the ceilings of Wren's churches are well worthy of study—not as models for ecclesiastical structures, for their outlines are now relegated to the theatre and music hall, but as developing new and original forms, curious adaptations of the dome, the vault, the intersecting groin, and the waggon-headed roof, and all remarkable for that exhibition of sound and scientific carpentry which enabled him, without hesitation, to carry out his designs, knowing that structural weakness or settlement was well-nigh impossible.

In details, the review is favourable, so far as interior effect is concerned, though the praise must be confined to a few of the altar-screens, the pulpits, and sounding-boards, and the entrance porches. The style forbade any free and generous treatment, and a cold and cheerless respectability was the chief characteristic. The fact was that the fine arts had withered under the blasts of civil war, and the subsequent contests between their enlightened friends and bitterest enemies had well-nigh rooted out all appreciation of their beauty from the land ; and this state of public feeling is only too truthfully represented in the details of the churches we have been considering. Had Wren lived in a different time, and under a better diffusion of the Church element, no one can say how different might have been the bias of his intellect, or from what other indigenous sources he might have drawn his inspiration. But the question forces itself upon us—If Wren was confessedly a great man ; if his works are deserving of study ; if his churches have had their successive bands of faithful admirers, are they suitable as models for our imitation ? Are they in any degree equal to the corresponding examples of the Pointed style which are scattered in such rich profusion throughout the land ? I think the answer to both these questions must be in the negative. The dead forms of Pagan art, dissociated from the prevalence of the sister arts which distinguish the Italian types of this Classic style, fall lifeless upon the taste of the present day, and have well-nigh passed into extinction. I feel as I gaze upon Wren's churches, or study their details in the exhaustive work of my late friend, Mr. Clayton, that I am not dealing with an architecture which has any continuous vitality, but with one which has hardly passed above mediocrity (not including S. Paul's) even in the hands of the eminent man under notice, and which in the hands of imitators and successors becomes absolutely contemptible. Models for our imitation these churches never can be. We may reverently admire the varied gifts of Wren—his constructive genius, his mechanical skill, his self-denying devotion to his art, his unvaried integrity ; but there is not a young architect before me just entering upon his career who would think of sitting down to study the design of a church with the forms and outlines of Wren's structures in his mind. And in reference to the other question, as to their equality with the noble specimens of Mediæval art, the reply must be equally distinct. There can be no comparison in beauty, because there is none in the principle which originated the rival styles. Sir C. Wren and those who worked out the Roman style took up an alien architecture never naturalized among us, having no congruity with our earlier religious national life, and lacking all association with the centuries which had gone before. It was an architecture of the library and the man of letters, not the architecture which represents the outflow of a great religious principle, under whose fostering care the successive forms of the style had been nurtured, developed, and refined. Equally susceptible of convenient arrangement as its Classic rival, the Pointed style appears to exhibit manifold and varied beauties, and in the types of these material forms our admiration is mixed with wonder when we compare the results with the general state of society and education, as contrasted with that which prevailed in the time of Charles II. and his successors ; for it is to be observed that the perfection of this art, as contrasted with Wren's, was achieved not amid the prevalence of national taste, the general spread of intellect, the general thirst and desire for knowledge. It rears its stately proportions during an epoch when the mass of the people were uneducated—when the practical and humanising effects of civilisation were but little appreciated; at a time when war usurped all the thoughts of the monarch, when the struggle for power by the lords of the soil forbade any attention to the fine and elevating arts, and when the comforts of family life were so little known that the squires of the day were lodged vastly inferior to the humblest occupants of a suburban villa ; when furniture was almost unknown, when even glass windows were treated as tenants' fixtures, and were removed from one house to another along with his other goods and chattels. The truth is that the very principles of the Church of the Middle Ages were directly calculated to bring out and perpetuate these magnificent results. To erect temples to the Divinity was considered the noblest work in which man could be engaged ; to lavish in their erection everything that devotion, skill, and genius could suggest ; to levy contributions on every side, and promise the rewards of heaven to the most generous ; to make the beauty of the material edifice subserve the working out and completing of a vast spiritual mechanism, in which the only two things seen were authority on the one side and submission on the other—these were the distinctive features of the Church of the time, and thus in their buildings they carried out and fulfilled what the ancient Churchmen considered their legitimate and august mission. The ecclesiastics of the time were the master-masons or architects of the time ; their names are for the most part lost to us, but there is no doubt that those who evolved these many forms of beauty from material things associated themselves together in one grand confraternity, dispensing to each other the secrets of their art, but never betraying them to the outer world, wishing not to gratify personal feelings or minister to individual vanity, but in accordance with the unbroken line of those traditional associations by which the Church itself was held together, and to consolidate, through the unity of the structures they raised, the strength and power of the great system of which they were the associated brethren. I must not pursue this line of thought further, but I submit it to you as accounting in great measure for the superiority of the national architecture over that practised by Wren—as explaining the enthusiasm created by the one, and the neglect which has fallen upon the other. But as a final word, allow me to say that while we must be careful to avoid narrow and contracted views in estimating the relative value of both Classic and Gothic models, we need not hesitate heartily and earnestly to express our preference, and to work energetically, for the development of that which in our judgment presents the only true ideal of form and design.

DISCUSSION.

The President, in inviting discussion on the paper, observed that it was remarkable how much work Wren accomplished, and what quality and thoroughness it exhibited, taking into consideration the circumstances under which it was produced. He built fifty-one great churches, besides the Cathedral, and a large number of secular buildings. After referring to Wren's rejected plan for the rebuilding of the city after the Great Fire, Mr. Watson spoke of the extraordinary genius and scientific attainments of the great architect, observing that his knowledge of mathematics suggested the question how far mathematics were necessary in the architectural profession, and whether they were not too often thrown aside for the mere artistic branches of study?

Mr. G. R. Redgrave proposed a vote of thanks to Mr. Francis for his paper, which he thought rather under-rated the work of the Renaissance in England. He was glad to find anyone bold enough to say that Wren's churches were ugly, for they were very ugly (laughter), built without any pretensions to façades. It was stated that some of the best spires of Wren's churches were designed by his daughter, notably those of S. Clement Dane and S. Dunstan's-in-the-East, the well-known spire of the latter church being supported by flying buttresses. Although much of the work of Wren's churches must necessarily have been designed by his assistants, yet they exhibited remarkable variety of design, and did not appear to repeat themselves ; but to criticise his works in detail, the "Battle of the Styles" would have to be renewed.

Mr. Paget, in seconding the proposition, said that at the present time, when Mediæval architecture was almost exclusively studied, Wren's work would well repay any attention bestowed upon it. He condemned many of the so-called "restorations" of Wren's buildings which had been carried out during the last few years. The idea of restoration was not now so much to restore a work to its original state as to substitute something new. He believed, however, that the way in which the work at All Hallows' Church had been carried out furnished an exception to this rule. He deprecated the use of tracery in the restoration of such buildings, even when (as Sir Digby Wyatt had suggested in the case of S. Lawrence, Jewry) it was of wood, although in the latter case it interfered less with the character of the windows. He thought that Mr. Francis had scarcely done justice to Wren in saying that his windows did not exhibit variety of form. A great perversion had been made by the use of tracery in S. Swithin's Church. Mr. Paget warmly commended the woodwork and ironwork of Wren's churches ; much of the former was ascribed to Gibbons. He thought that Wren's spires were very beautiful, those of Bow Church, Cheapside, and S. Magnus, at London Bridge, being good examples. Wren also exhibited the hand of a master in the way in which he grouped his spires round the great dome of S. Paul's.

Mr. Lacy W. Ridoe thought that the steeples of Sir Christopher Wren had not been treated with the consideration which they deserved. The huge roof of the Cannon-street station had to a great extent marred the view of them which was to be obtained from the bridges. The steeple of St. Mary-le-Bow, Cheapside, was extremely beautiful, and sprang from a splendid tower, and in this age of finicking details, when each little church and chapel must have its turret and tower, it was quite a treat to meet with a good square stumpy tower (laughter). In Italy the towers were frequently without buttresses, and such examples were well worth attention. He disagreed with the opinion that in restoring a building an architect was bound to adhere absolutely to the original design; that was an archeological notion, and he was persuaded that archæology would die out in about fifty years (laughter) He thought that where a design was bad it should be improved. He disagreed with the author of the paper in the opinion that the original design for S. Paul's was deficient to the one carried out in its provisions for accommodating a congregation. His (Mr. Ridge's) opinion was that the first design was preferable.

The President, in putting the vote of thanks expressed the opinion that S. James's Church, Piccadilly, was one of Wren's best churches, inasmuch as was said to be capable of holding two thousand persons so that all could hear. The motion having been carried by acclamation,

Mr. Francis, in returning thanks, incidentally stated that Wren's remuneration did not exceed £200 per annum. As to the suggestion that some of the details of Wren's work might legitimately be altered, it might be asked whether the architects who contemplated such alterations were always competent to undertake them? And if they were to begin to remodel where would they be able to stop? In conclusion, Mr. Francis expressed the hope that some of the members would find an opportunity to visit All Hallows' Church.

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NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 160.)

Plate 24.—Construction of Wreath from 'Rake to Level.

FIGURES 1 and 2. These plans exhibit a straight flight of stairs, landing on a level floor. Both cylinders have equal diameters. That on right shows face of riser standing on the spring-line, whilst that on the left is made to stand back in cylinder.

This is all wrong; yet such mistakes do occur, even with practical men. The correct methods for position of risers on similar stairs have already been given. But here an error has been committed, which must be covered by producing a wreath to stand over it; so that no imperfection shall appear in either rail or stairs. This will not be difficult when we have a system which applies with certainty to every situation, be it right or wrong.

Fig. 2. Line A B shows height of riser, and A C the step. Let under-side of level rail be half a riser above landing. Set off thickness of rail from both rake and level, and draw lines intersecting at E. Square down from E, cutting at D. Let D L equal D A. Tangents are now in position for lower part of wreath. The line D L falls level, and A D stands on pitch V E. Square over V N. This gives N E for height.

Fig. 3 shows construction of mould. Let A, D, L equal tangents above. Draw L H extended and parallel with A D. Make H T the height, equal that of N E above. Join A T extended. This line being both pitch and major axis gives plain directions to strike mould, as hown.

This piece of wreath forms its own easing, similar to that starting from a newel. Stuff for level piece should be a little thicker than that of the rail, say half an inch. This gives the opportunity of increasing the curve across joint on upper and lower side, and adds much to appearance of wreath.

It is understood, however, that the additional stuff, being more than the thickness of rail, throws level that much higher. That being so, lower the height N E half an inch.

Referring to Fig. 1, it is seen that riser-landing stands in the cylinder. Height of level rail is the same as that on right. The letter E shows intersection made by pitch and level. Perpendicular E D gives H D, and D L for tangents. Letters K V show height of wreath, and K E the ordinate.

Fig. 4. Let H, D, L equal [tangents above. Draw L T extended and parallel with D H. Let T K, the height, equal that of K V above. Join H K extended. Next, square over K and H. Let K V equal T L, and H E equal H D. Join E V extended. This line, to be correct, must equal that of V E above.

To find width of mould on wide end,

Set off half width of rail on each side of H. Then draw parallel with H D to cut pitch. Now find points to insert pins and strike the mould. Observe that the tangents at Fig. 1 throw the joint past centre. This gives to the lower piece of wreath sufficient easing. Then, the level part connecting with it remains the same thickness as that of straight rail.

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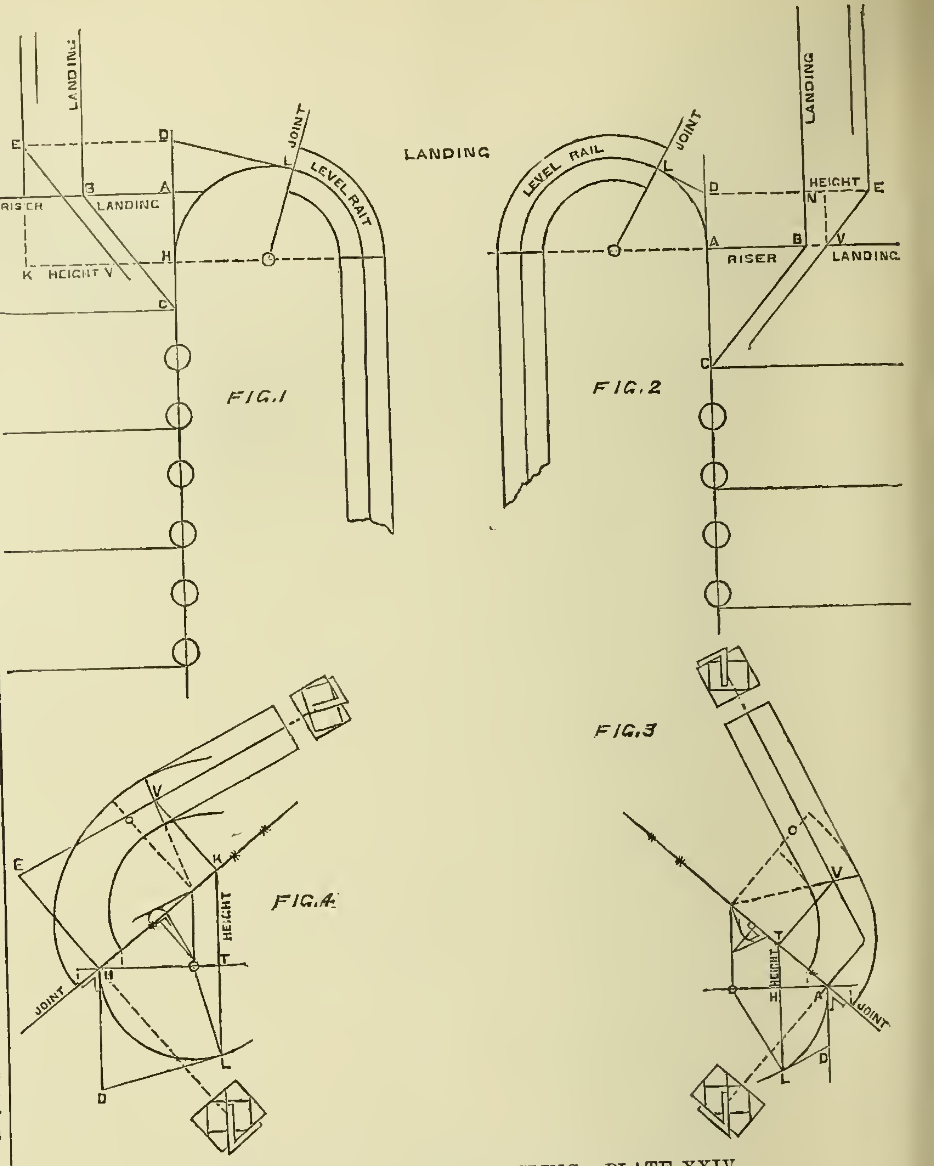
A class for the study of land surveying is about to be formed by the members of the Architectural Association.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXIV.

CHAPEL IN TRANSEPT OF MUNSTERMAIFELD CHURCH, RHENISH PRUSSIA.

THE church of Munstermaifeld is composed of many parts, built at different times in the middle ages. In plan it is similar to most of the churches on the borders of the Rhine. The front dates from the [epoch of the Carlovingian dynasty, while there is reason to believe that the basement existed in Roman times. The three towers are of much more recent date, having been added so late as the fifteenth century. The dates of the choir, nave, transept, and two chapels are from 1255 to 1260. Our illustration represents the interior of one of the chapels. The style is Transitional, and the beauty of much of the detail well worthy of notice. The material is a very soft stone called "tuff," frequently found in the Rhine Provinces.

Paul Tornow.

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STREATHAM HILL CONGREGATIONAL CHURCH.

THIS church, a view of which is given in our illustrations this week, is in course of erection from the designs of Mr. E. C. Robins, of 16, Southampton-street, Strand. It occupies the site of the quasi-Classical building known as Union Chapel, which was erected in 1829. The church is designed in the Early French Mediæval style, with lofty nave and aisles, but no clerestory. An open porch with coupled Devonshire marble columns and carved caps is situated between the west gallery staircase and the tower and spire. There are transepts at both the eastern and western ends of the aisles. The organ gallery is behind the pulpit and platform, and the deacons' vestry is beneath it, on one side of which is the minister's vestry, and on the other the eastern gallery stairs. Upwards of 800 persons are to be accommodated. The nave columns are 14in. diameter, and alternately of red Mansfield and Blue Pennant stone, with Portland carved caps and moulded bases. The cast-iron zones receive the ends of the gallery trusses which support the galleries on the north, west, and southern sides of the building.

The interior has an open roof, and walls faced with white gault bricks, relieved by red gault bricks in patterns and Bath stonework. An elaborate Caen stone screen and pulpit, supported on marble columns, forms the eastern termination of the raised platform and tessellated pavement. The windows are all filled with tinted glass in patterns, and a painted wheel window will be fixed in the east gable wall of organ gallery.

The exterior of the building is faced with Kentish rag with Bath stone dressings. The bands in the spire are of red Mansfield and Blue Pennant stone. Mr. Higgs is the contractor.

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GLASGOW.

AT a meeting of the Town Council, held las week, a Mr. Kibble offered as a gift t the City, upon certain conditions, a conservator valued at £15,000. At the same meeting a pro posal to form a swimming and skating-pond o the Green was rejected by a majority.—A. M Barclay, who dates his circular from the Un versity, advertises that he "is at present form ing a class for the study of architecture as a fi art, to be held in the Corporation Galleries."— is expected that the Albert Bridge will opened this month—probably on the marriage d of the Princess Louise.

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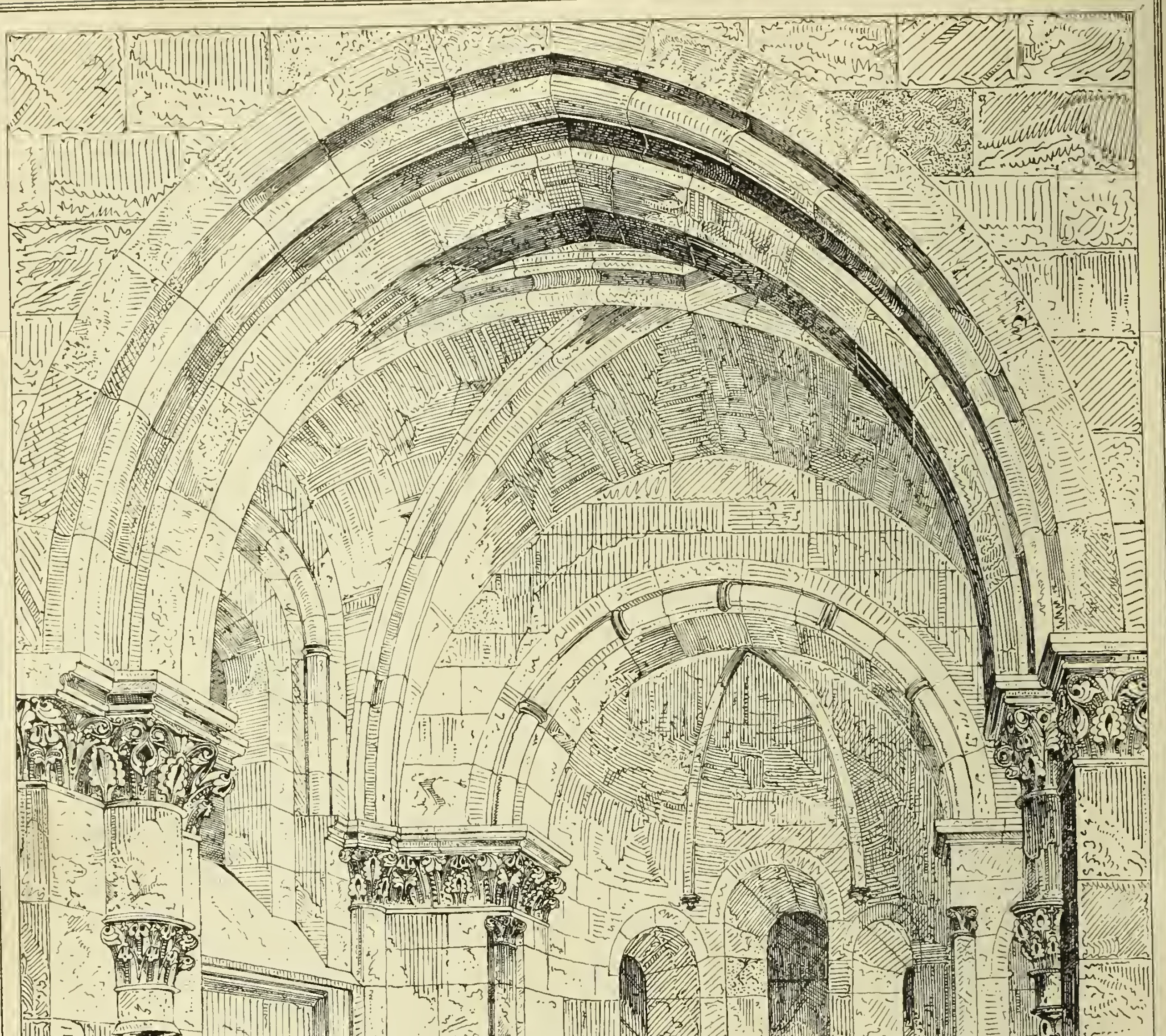
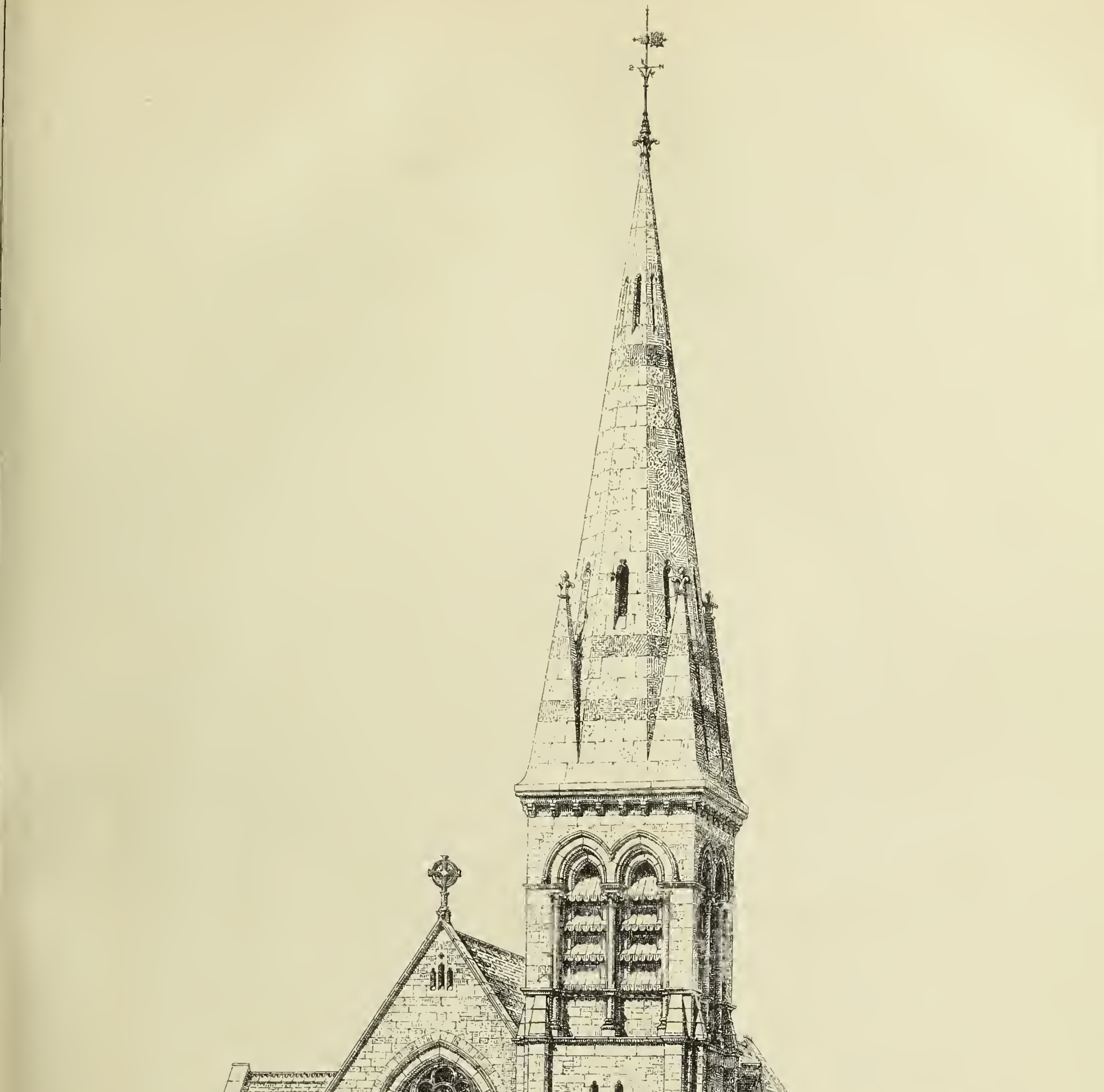
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

Supplement to the Building News Mar 10th 1871.



Chapel · in · Transept · of · Munstermaifeld · church · – · Rhenish · Prussia

Photo-Lithographed by Whiteman & Bass London



STREATHAM-HILL CONGREGATIONAL CHURCH. E. C. ROBINS. ARCHITECT.

Photo-Lithographed by Whiteman & Bass. London

WATER MAINS.

SOME time ago we gave a serics of articles on the supply of water to towns, but the practical work of pipe-laying was not touched upon. The following remarks may be taken as supplementary to that series :—

Pipes for the conveyance of water underground are usually made of iron, cast from the furnace, in lengths of 9ft., but large main pipes are sometimes made 12ft. long. The external diameter of the pipe having been determined, the pattern from which it is to be cast is placed in a dry sand mould, and on its being withdrawn a core is adjusted accurately through the centre of the mould, of such a diameter as will allow of the required thickness of metal being cast around it. When pipes are cast horizontally, or more or less slanting, the core by its weight sags or bends downwards in the middle, causing a greater thickness of metal on the upper side and a less thickness on the lower side than had been calculated upon. Therefore, it is preferred to cast the pipes vertically, by which means, with proper care, a very uniform thickness of metal may be generally obtained. For this purpose a special pit is required, of considerable diameter and depth, and it is not at every iron-foundry that it is at all convenient to construct such a pit, and those foundries possessing them have much advantage in competing for large pipe contracts. Branches, bends, and other irregular pipes are cast in boxes, horizontally, and to guard againt the difficulty of keeping the metal of uniform thickness, it is made greater than that of the straight pipes to which the irregular pipes belong.

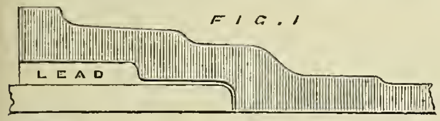


FIG. 1

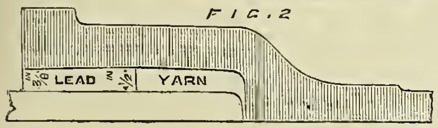


FIG. 2

WEIGHT.

The thickness of which pipes are usually cast, and, therefore, their weight, varies with the positon in which they have to be laid, embracing considerations of the head of water under which they are to be placed, and the external pressure to which they may be liable, as well as of whether they will be liable to sudden checks in the flow of water in the larger mains, but an average strength may be stated to be as follows :—

Diameter.	Thickness.	Weight.		
ins.	ins.	cwt.	qrs.	lbs.
3	$\frac{3}{8}$	1	0	14
4	$\frac{7}{16}$	1	2	7
5	$\frac{1}{2}$	2	0	21
6	$\frac{9}{16}$	2	3	14
7	$\frac{9}{16}$ & $\frac{1}{32}$	3	2	7
8	$\frac{5}{8}$	4	1	0
9	$\frac{5}{8}$	4	3	21
10	$\frac{5}{8}$ & $\frac{1}{32}$	5	2	14
12	$\frac{11}{16}$	7	1	0
14	$\frac{3}{4}$	8	3	7
16	$\frac{13}{16}$	10	2	7
18	$\frac{13}{16}$ & $\frac{1}{32}$	12	3	0
20	$\frac{7}{8}$	14	3	0
24	1	20	0	0
30	$1\frac{1}{8}$	28	2	0
36	$1\frac{1}{4}$	38	2	0

These thicknesses are not in all cases exactly those which give the weights stated, but are given to the nearest 32nd part of an inch ; and in practice it is better to specify the exact weights required rather than the thickness, the core being turned down to the size required to give those weights exactly, or as near as practicable, in the casting.

COST OF A LINE OF PIPES.

The price of pipes varies with the state of the iron-market, and so affects the ultimate cost when laid down ; but an average cost per yard of a line of pipes laid complete, with lead joints, may be taken to be as follows :—

Diameter.	Cost per yd.		Diameter.	Cost per yard.	
ins.	s.	d.	ins.	s.	d.
3	4	3	12	24	6
4	5	6	14	29	0
5	7	0	16	35	0
6	9	0	18	41	0
7	11	0	20	48	0
8	13	6	24	58	0
9	16	6	30	78	0
10	19	0	36	105	0

Besides the cost of the pipes themselves as castings, there are some preliminary expenses to be incurred before the pipes can be laid. A coating of something that will prevent the oxidation of the iron is necessary, at least, in the inside of the pipes, and it is all the better if they be coated both inside and out. When only the inside is coated, lime is sometimes used in the form of a wash ; quick-lime being mixed with water to the consistence of cream, and applied with a brush ; but another method, and that now more generally adopted, is one invented by Dr. Angus Smith, and consists of a coating of the pitch of coal-tar, which is melted and heated to a high degree, and the pipes are dipped into it whilst they are still hot, thus coating them both inside and out. It has been found that when this process has been well performed the coating has continued perfect for many years ; and it has the beneficial effect of reducing the friction of the water passing the pipes by offering a smoother surface to its action than the crude iron presents. This process adds about 5s. per ton to the cost of the pipes. Then there is the carriage to the wharf or railway-station near which the pipes are to be laid, and the haulage from thence to the trench.

TRENCH WORK.

The pipes having been laid alongside, the trench is excavated to such width as will give room for the excavators to work in, and to a width sufficient to allow of the excavated material, when it shall have been refilled into the trench, being well rammed under the sides of the pipes, which cannot be done properly without from 6in. to 8in. of room on each side of the pipe.

Refilling a pipe trench, like any other filling or embankment, is to be done in regular layers, not too thick to allow of their being well rammed and consolidated, for which purpose they should not exceed a foot in thickness ; indeed, to prevent further settlement, 6in. is as much as should be allowed. The width of the trench at the bottom ought to be so much wider than the external diameter of the pipes as will allow the punners (to use a navvy's word, which means pounders) to be used freely to ram down the earth solidly underneath the sides of the pipe. Unfilled spaces left under the sides of the pipe will become self-filled in course of time, by the solvent powers of the air they contain, causing a gradual settlement, which may be years before it ceases ; and in roads or other frequented places this sinking, being unperceived until the crust suddenly gives way, becomes very dangerous.

But besides this general width an extra width is required at the joints, to allow the pipelayers room to turn and work in, and this should be at least 9in. wider on each side than the width of the trench. The length of the joint-hole, in the direction of the line of pipe, should not be less than 2ft. for any size of pipe, and for large pipes, where double-handed hammers have to be used, 3ft. The widths here given are those suitable for good, firm, and dry ground, and for the smaller sizes of pipes where no timbering is required; but where the trench is of considerable depth an additional width of 6in. is required for the thickness of the walings, 3in. on each side ; and where the ground is so bad as to require poling boards behind the walings, a further width of 3in. is required for them, 1½in. on each side ; and further still, where the ground is of such a nature that boards cannot be driven, but that close-planking is required, then instead of 3in. for poling boards, 6in. must be allowed for the thickness of the planks or deals. Moreover, in any ground, although there would seem to be no difficulty in doing it, the sides of the trench cannot, in practice, be cut down perpendicularly ; so that even when no timbering is required there needs to added to the bottom widths 6in., at least, for the top width.

The depth of a pipe trench is governed by the consideration of how far below the surface frost will penetrate, and, in the case of large pipes, how deep they must be laid to be beyond the jarring effects of traffic over them, which has a tendency to cause leakage at the joints by starting the lead filling, which is more easily effected when to the steady pressure of water in the pipes is added the jarring here alluded to.

There is another reason for laying large pipes deeper than small ones. It is known that a cast-iron pipe of large size will not bear much external pressure; and when we consider the enormous weights—say large boilers or traction engines, which may pass over a line of pipes—it is well to take the precaution to prevent the pipes being subject to these pressures. The following are the least depths for pipe trenches, to which must be added 9ins. each joint hole. Greater depths than these will occur in places along most lines of pipes, where, for instance, a rise in the ground is to be cut through to avoid an air lock, or where a culvert or pipe has to be passed under ; but all these are to be considered special depths, and in all cases extra to the depths given. The widths and depths are as follow, the width being that at the bottom, and the depth the minimum depth, exclusive of joint-holes :—

Diameter of Pipe.	Width of Trench.		Depth of Trench.	
ins.	ft.	ins.	ft.	ins.
3	1	3	2	3
4	1	4	2	4
5	1	5	2	5
6	1	6	2	6
7	1	7	2	7
8	1	9	2	8
9	1	10	2	9
10	2	0	2	10
12	2	3	3	2
15	2	6	3	6
18	2	9	3	11
20	2	10	4	2
21	3	0	4	4
24	3	3	4	9
27	3	6	5	2
30	3	9	5	6

The expenses in laying pipes consist of, besides those of the trench, those of lead, yarn, coals, tools, getting the pipes into the trench, jointing, caulking, running, and setting up.

As to the kind of joint, the old lead joint maintains its position of general usefulness amongst several other kinds that have been proposed, one only of which has come into use—viz., the turned and bored joint ; but this is only suitable for straight lengths, and where the ground is not perfectly hard and unyielding it is too rigid. Iron cement and wood have both been proposed but never used ; gutta-percha also has been proposed, but the most generally useful joint is undoubtedly the lead joint.

JOINTS.

A lead joint is made by first caulking it with white spun yarn to a depth of from 2in. to 2½in. in depth, according to the size of the pipe, and the outer space, being from 2in. to 2½in. in depth and from ⅜in. to ½in. in width, is run with lead, a band of well-tempered clay being first put round the front of the joint, working it upwards from the bottom and leaving a hollow space at the top, into which the melted lead is poured, which runs round and fills the joints at once, if the ladles are large enough or brought up in sufficiently quick succession to completely fill the joint at one running, which should always be done. After the clay-band has been removed and laid aside to be worked up again, the excresences of lead are cut off with chisels, and whatever lead may remain projecting outside the end of the socket is set up all round, with properly cranked steel tools, so that they may be held in one hand whilst they are struck by short-handled square-faced hammers with the other; or else, where the pipes are large and the work heavy, the setting-up tools are held in hazle set-rods by one man, while another strikes them with double-handed hammers. The caulkers and the setters-up are usually separate sets of men where the work is of magnitude, the one set preparing the way for the other; but in laying smaller pipes the same set of pipe-layers do both. The dampness of the clay-band and the moisture on the pipes give off a vapour when the hot lead comes in contact with them, which blows out the lead in spray, and is dangerous to the workmen if the precaution be not taken to put into the hollow into which the lead is poured a small quantity of resin.

SOCKETS.

The hard setting up of the lead has a tendency to split the socket of the pipe, and its outer edge is therefore thickened very much beyond what its strength would otherwise require to be. It is usually about twice the thickness of the body of the pipe, while the body of the socket is half as thick again as the body of the pipe. There are various ways of forming the socket of a pipe. Sockets of the shape shown in fig. I have been used to save yarn and to ensure the spigot end of the pipe being brought up to the level of the body of the adjoining one; but the risk, unavoidable with large numbers of pipes, of some of the ends being not truly cylindrical, renders this method undesirable; for without the greatest care and patience of the pipe-layers turning the pipe about when they find it will not go "home," pipes are liable to remain only half-way home, and so bad joints are made; while, by employing a couple of short wedges, one on each side of the pipe underneath, to bring it up to its proper level, the annular space for yarn and lead can be easily equalized, and a good joint made with plain sockets.

As to the form of the lead space, it is better to make it as shown in fig. 2, so that the lead assumes a wedge shape on the side on which the pressure comes upon it, tending to prevent its being blown out.

Sometimes a bead has been cast round the end outside the pipe, to prevent the yarn being driven into the interior of the pipe, but in severe frosts pipes are contracted, and the bead draws out the lead, which is not returned into the socket when the pipes expand again, but is left protruding, so that pipes are now generally made with plain ends. Similarly, a band, or a couple of them, used to be cast round the body of the pipe, but there is no necessity for them.

In laying large pipes, they must necessarily be laid singly, while two small pipes of 3in. or 4in. diameter may be jointed outside of the trench, and laid together. For large pipes, special machinery is required for laying them. The common three-legs do well enough for pipes up to about 18in. diameter, but for those of 24in., 30in., 36in., and 40in., wheeled carriages are better. A convenient form is one with two wheels, with a bowed axle, from which the pipe is slung by blocks and chains. The pipe is rolled up to the trench as near as may be to where it is wanted, and the pipe-carriage picks it up and carries it to its place and lowers it into the trench. Cross timbers and runners of half-balks are required for this work, and to prevent accidents from their breakage, the soundest Baltic fir timber should be selected. Oak or other hard wood is too heavy to move about, and American pine gives too little warning of its being overloaded before it breaks, but good Memel or Dantzic fir combines the qualities most required.

To get the pipes from the wharf or depot to the trench is sometimes not an easy thing to be done when they are heavy. Hauling-carriages are sometimes made to run on four wheels, but a very good form of carriage is one with two broad wheels with a bowed axle, from which the pipe is slung. For small pipes a low four-wheeled truck is used, on to and from which the pipes are rolled; but for pipes of large size it is usual to sling them underneath. The ordinary two-wheeled cart is very unhandy for this kind of work, even for the small pipes.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE twenty first lecture of this course was delivered by Dr. Zerffi in the Lecture Theatre of the Kensington Museum on Tuesday afternoon last. The lecturer said that in summing up the contents of the preceding twenty lectures it would be found that the statuary of the ancients might be divided into three great groups, viz., the Symbolic, the Idealistic, and the Naturalistic. Egypt was the representative of symbolism, Greece of idealism, and Rome of naturalism. In these three divisions many phases and amalgamations of other styles had been and would be traced. The styles represented the stages of transition from the first attempts in art to the most glorious productions of architecture and sculpture—from the first scanty lines in ornamentation to the well-regulated symmetrically-arranged decorations of Greek works. The whole surface of the globe had nowhere shown a decline in art; on the contrary, from the pottery of prehistoric times and the rough wooden dolls of Egypt, Assyria, India, or Greece, to the Zeus of Phidias, mankind had slowly but surely drawn nearer to perfection. There could be no doubt that this progress did not take place everywhere simultaneously, but passed like a vivifying shower over districts, producing various fruits according to the quality of the soil. In science actual knowledge was the sum total of all the ideas, discoveries, and theories which had preceded our times, and this was the case with art in general—with ornamental art especially. The general motives and forms were given, and all depended upon the right use and variation of that which had been handed down to us by former generations. The three groups, symbolic, ideal, and natural, still ruled supreme, and only a right understanding of the sphere of each would enable us to progress in art. The Aryans had shown their intellectual superiority on the Ganges as metaphysicians and constructors of rock-hewn temples. They had built palaces and towers round Babylon and Nineveh; had, as Persians, made conquests on the Euphrates and Tigris; and had produced marvellous works of art in Attica and the Peleponessus, and at Argos, Rhodos, Korinthum, Syrakos. The same Aryan spirit might be traced on the shores of the Nile, founding the most powerful hierarchy, and astonishing the world with gigantic architectural productions. We had found the same element on the other side of the Atlantic, having discovered traces of analogous works of art on the shores of the Orinoco, Mississippi, and Lake Titicaca. Wherever a free intercourse with Nature had taken place, a symmetrical appreciation and correct reproduction of forms had been the result. On the other hand, we should find that wherever the productions of Nature had been looked upon as being those of an evil spirit, this had not been the case. The more man occupied himself with the contemplation of Nature, the more he realised the peculiar charm of the blended beauties of sea and land, and of human beings endowed with the divine spark of intellect, and with bodily grace; and the more he advanced in artistic power, plants and flowers, trees and waves, became animated, and Nature spoke to the imagination the intelligible language of beauty. Their reproductions were but echoes—transcriptions of the whisperings of Nature. We could trace in art many deviations from the path of beauty, but we should find that through all the vicissitudes of its historical progress the productions of our great Greek masters were never altogether forgotten or lost. In reference to the works of the Etruscans, Dr. Zerffi observed that the origin of this people had been traced to the general group of the Aryans. The first settlers in Etruria, the Pelasgians, had built the town of Tarquinii, which for a long period remained the chief town of the Etruscan confederation, and had always been the centre of Greek culture. Having settled on the western slopes of the Apennines, this nation had, at an early period, to struggle against the powerful influences of Nature, and was driven to industry and enterprise. The people, the lecturer continued, had had to gain their soil by force. In spring they were compelled to stop the inundations caused by overflowing rivers, and in summer to provide water for the parched valleys. They soon became masters of the arts of constructing aqueducts and irrigating land. They were superstitious, but this was not to be wondered at, as the most extraordinary petrifactions everywhere abounded. Near Contesi the bones of a whale had been found, and the Valley of the Arno resembled a burial place for elephants. The bones of the mastodon, the rhinoceros, and the hippopotamus were scattered all over old Etruria, and were used to fence in the fields. Those of bears, wolves, hyænas, panthers, &c., were, however, in such abundance that the peasants even at the present day believe they grew like plants, and were sown by invisible spirits. The aspect of Nature and the remains of an antediluvian world had given the Etruscan priesthood an irresistible sway over the minds of the people. The Etruscans, unlike the Greeks, in whom the sense of the beautiful was keen and intense, had directed their minds to gloomy contemplations or to practical purposes. To defend their towns they constructed walls, and to protect themselves from imaginary monsters they built excellent houses. Their temples differed in some details from those of the Greeks. The cella had generally been square, and sometimes more than one had been constructed in the postica. The antica had been filled with columns. The style was Doric, but the Etruscans never attained that earnest majestic simplicity which brought this order to such perfection in Greece. The columns had bases, were more slender, and stood further apart, supporting a wooden roof with clumsily protruding beams and unwieldy cornice and high pediment. Some cinerary chests showed Greek forms, but were of coarse workmanship. To tombs and burial places the Etruscans devoted great care. These might be classified under five headings—(1) Subterranean tombs, hewn into the tufa with steps leading underground; they were generally provided with a vestibulum consisting of several chambers, sometimes supported by columns. The ceiling was either horizontal or pointed (in imitation of a wooden roof). Tombs of this class were to be found at Volci, Clusium, and Volaterræ. (2) Subterranean tombs with tumuli above them; they were generally single graves. The corpses were placed on stone beds, to be found at Tarquinii. (3) Burial chambers (cocumella) with artificial hills above them, provided inside with a tower-like construction, to be found near Volci, Tarquinii, and Viterbo. (4) Chambers vertically hewn into rocks, with a simple or ornamental entrance, to be found near Tuscania. (5) Similar rock-hewn chambers with façades screening the entrance; these façades were either in the form of doors (as in Aria) or of Doric fronts (as at Orchia). The tombs were all more or less ornamented. In all Etruscan productions the predominating element was the want of idealism, as they possessed only a sober spirit of practical execution. Many of their sculptures connected this people directly with India and Egypt. The importance of their art, from an historical point of view, was derived from the obstinacy with which they had held to the old traditional forms and types of the East at a time when Greece could already boast a perfect art. This was clearly proved by their tombs, the reliefs of which were full of lively scenes, reminding us of Assyrian and Babylonish sculptures. Having described these reliefs in detail, the lecturer went on to say that the Etruscans had at a very early period excelled in pottery and metal works. Chiselling and founding were well known to them, and a vast number of chests, candelabra, mirrors, and other objects testified to their ability in working gold, silver, and bronze. About 660B .C. Euchier, Diopos, Eugrammos, and Demaratos were driven into Italy from Korinthum, and had taught the Etruscans a higher kind of artistic feeling. From that time these people had especially excelled in terra-cotta works, as was shown by the specimens of vases, amphoræ, statuettes, and bronze works. They were very fond of bodily ornamentation, and this was the case at the present day with the peasants. To wear a ring was considered essential by an Etruscan, and this accounted for the fact that the art of cutting stone (*glyptics*) was so much cultivated amongst them. In illustration of those remarks, Dr. Zerffi drew attention to a collection of specimens of jewellery, &c., from the Museum, and said that Etruscan works of art might be divided into five classes, which were (1) the original Tuscania (as they were called by Strabo), or Etruscan products, which were heavy in form and details. The dresses were stiff, and a peculiar characteristic of the figures was that they were without beards. Of this class we had many bronze works, very few sculptures in stone, some gems, and some very ancient wall-paintings,. (2) Imitations of Oriental (especially Egyptian and Babylonish) forms. Tapestry was much used for floor and wall decorations. These productions were good as imitations, but were wanting in originality. (3) Caricatures, which were always to be found at times when nations would not look upon art from a higher point of view. Taste degenerated, and the quaint was preferred to the harmoniously simple. The imagination once driven in this direction exerted itself to excel in grotesque compositions; and as these productions could not be brought under the rules of strict beauty, artists found them easier, and, therefore, more delightful. (4) Works in the best Greek style in bronze only, such as frames and handles of mirrors. The modern *articles de Paris* had their prototypes in the "articles of Etruria." Whenever the higher spirit of art was neglected, the dynamic force created highly-meritorious works, but on a far smaller scale. (5) Mechanical products. With reference to these, the lecturer observed that art, looked upon as an outgrowth of bare necessity, could not flourish. The utilitarian incubus expelled all higher ideas and aspirations from the brain of the artist, and only where the two elements—the utilitarian and the artistic—were combined could real works of art be expected.

In his next lecture Dr. Zerffi will take up the subject of Roman art.

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BUILDING SURVEYORS AND CONTRACTS.

THE President of the Royal Institute of the Architects of Ireland, in his inaugural address, among other topics, touched upon the duties of building surveyors with regard to quantities and measurements. Certain views expressed by the President led to the subject being taken up by Mr. J. Mc. D. Bermingham, associate, who, on the 16th ult., read a paper of which the following is an abstract.

After referring to the way in which the practice of preparing detailed bills of quantities for nearly all building works to be contracted for has increased of late years in Ireland, Mr. Bermingham proceeded to show that the issuing of such quantities was desirable, on the grounds that fair remuneration for fair work is the guiding principle to produce harmonious action between architect, builder, and client, and by having a carefully prepared bill of quantities a great obstacle is overcome, carrying with it, as it should, the belief that the actual work to be executed is therein represented, beside presenting an array of prices likely to meet any emergency in the event of alterations to the contract. Having spoken of the advantage conferred on the architect by having the assistance of a surveyor, inasmuch as he was relieved somewhat of the responsibility resting upon him, the author next considered the question, whether the absorbing of the duties of the quantity surveyor into those of the architect would be judicious? He did not believe it would, for it would be a combination in which, on the one side, the ideal and the artistic should largely predominate in the mind, while on the other, it is the dull monotony of calculations, the tedious unravelling of problems which necessitate patience and perseverance. To be skilled in architecture requires all the study and practice which a student can give, without more than incidentally acquiring an insight into the systematic principles involved in ascertaining the work to be executed, and in dealing with alterations arising in course of execution; while to be skilled as a surveyor, also requires a great amount of study, besides a much more intimate knowledge of the working of a builder's business, both as regards the various means of best and most economically providing all materials, and of disposing of the same in the structure. The taste developed in designing is rather antagonistic to that developed by the incessant routine of calculations. As regarded the idea of the architect having a deputy to perform the duties of a quantity-taker, Mr. Bermingham had grave doubts as to whether it would be found to work well. Of course it was quite feasible to have the quantities issued in that way, but he concluded that the builders would urge the attachment of the quantities to the contract, and in that case would such a deputy be found equal in discussion on all questions arising to the independent surveyor, with his great and varied range of experience? He (Mr. Bermingham) thought not, and therefore he dissented from the President's recommendation of combining the duties of the quantity-surveyor with that of the architect, except so far as it suggested the employment of a separate party. Though the two branches were combined in practice in many parts of England, that fact afforded no proof that that plan was better than the separate system adopted in London, from which, as being the scene of the largest experience, a strong precedent might be taken. Referring to the custom of Scotch architects, Mr. Bermingham said that from a letter he had recently seen it appeared that in Glasgow the quantities are used principally as a schedule of prices, and that the whole work is measured at periods during the course of erection, as may be most convenient, the contractor being paid, according to the schedule, for all works over that returned in original quantities, and having deducted all under amount therein represented. The only way he can absolutely lose, therefore, is by undertaking work at too low a price. The payment for measurement of executed work is defrayed, half by employer and half by contractor. Though this principle possessed many good points, and recognised the honesty of paying for work done if same had not been included in the data from which the lumpsum was arrived at, and *vice versa*, it would largely increase a surveyor's duties, and the author did not think this plan was the most desirable. Would it not be time enough, he asked, to incur expense of this kind if the contract was departed from, in which case the amount of departure could be ascertained without the necessity of a total measurement? There evidently existed a strong confidence in thus mutually abiding by the impartial judgment of an independent surveyor as to the quantity and value of the works executed, and from it the author inferred that the aim of the proposal in the address could be obtained by a simpler but probably quite as effectual a process.

Mr. Bermingham next proceeded to consider what steps are necessary and practicable to operate successfully in procuring a firm basis on which contracts can be entered into and completed with an honest impartiality, and to the satisfaction of all concerned, and especially with a view of improving the confessedly unhealthy position and relations of the independent building surveyor. The latter, in many cases, is looked on as an unwelcome intrusion; and though much may be said against him *under existing arrangements*, he is, on the other hand, made to bear burdens not properly his own. This is to be attributed to the most unpleasant position in which he is now placed. He is not supported by his natural ally, the architect, and is barely recognised except as the servant of the builder. Why is this? Is it because in the main he is employed by the contractor, and, in the honest protection of interests entrusted to him falls foul of the architect? Is it because in points of dispute he sometimes is enabled to prove that certain claims must be allowed—claims which increase the expenditure to an unlooked-for amount? Or is it because there is an impression that in preparing the original bills of quantities, the tendency, unavoidable though it may be, exists of measuring same "full," thereby increasing the amount of tenders to the prejudice of the client, and widening the difference between same and the approximate estimate of the proposed works? Among these questions may be found some idea of the reasons that have brought about this state of things; and with a proposal before you of re-uniting that branch to the others of the profession, it seems rather strange, that within the lapse of a comparatively short time such a feeling of estrangement should be engendered by the separate practice. Does there exist now a greater proportion of disputes than formerly by which this feeling would have been encouraged? Now though Mr. Bermingham did not desire to exculpate surveyors (for some of them were, in his opinion, largely to blame in having brought about their present position), he could not help expressing his belief that architects were not without some responsibility in such being the case. Moving in the higher branches of the profession, with influence of no small degree in regulating all matters in connection therewith, and as arbitrators between the public and the contractor, it was their place to inspire confidence in the class risen up to discharge the duties laid aside by themselves, and to have used their influence to prevent classes creeping in which have eventually created the present unhealthiness. The surveyor is of course, in common with the rest of the world, liable to err; but this is not to be wondered at when you think of the great division of his labour, the numberless items which, while essential to the carrying out of the works, are arrived at by continued strain on the memory —by, in fact, raising the edifice in his mind; the systematic care required in transferring to paper all the items occurring in so doing; remembering also, that by far the greater liability accrues to him from forgetting something altogether, or in part, than from returning same too "full." Considering these matters, there must be an instinctive inclination towards returning each item a little "full" in order to protect from loss the people with whose interests he is entrusted, as he finds, on entering the pursuit of his business, that he has a larger share of support from the building community than from the public or the architects who represent them. Again, where work is advertised, every class of builder may come together, as also it may be the case in limited competitions, where the greatest strictness is not pursued. So long, therefore, as architects stand aloof, and that the present system exists, the tendency with the surveyor must be to strain the mind's view of the impartial and just. With the adjusting of final accounts the surveyor becomes much associated, and unless when employed by and between the parties concerned, he should not be looked as an arbitrator, either in theory or practice. In rare cases this does occur, and the result goes to prove that the mutual confidence has not been misplaced, that an impartial and fair view is striven to be taken of the meaning and construction of the contract, and the various documents that form part thereof. On the other hand, when the surveyor is employed either to measure "extras" and "omissions," furnishing the contractor's account, or to check same on the part of the client, when submitted, he at once loses any claim to the position of an arbitrator, except so far as consists in watching the interests of his client.

As before remarked, architects are not without some responsibility for the very unwholesome state of things which undeniably exists. Is it not an unpleasant fact that the public regard an acquaintance with stone, brick, and mortar as a species of speculation in which all their calculations are only ideal? Is it not characteristic of some architects that they aim at obtaining the greatest accommodation and effect for the sum proposed to be expended, and does it not often occur in that endeavour the mark is over-reached? With this result, that when the tenders are received, and the works proceed, dissatisfaction ensues, the client being put to a greater outlay than he desired. Another not unusual cause arises in the plans and specification not being clearly defined. The surveyor is, therefore, obliged, in many cases, to decide for himself between different views, and, as a necessity, has to adopt that which will prevent his client from subsequent loss; while, had sufficient details of work and specification been furnished, he could better perform his duty, while the tenders would be reduced by a perceptible percentage. Another cause, and one prolific of unpleasant consequences, occurs in the matter of throwing the onus on the contractor, and binding him up with all kinds of conditions and clauses—no doubt justifiable, as intended against those who cannot act uprightly, but certainly not necessary if a proper and judicious selection be made of men of respectability and character. He is compelled to give security for the performance of his portion of the contract, while the party with whom he makes same, though possibly not a whit more honest or safe, gives none for the performance of his, viz.—*the payment*, and this may account for the general preference for executing contracts for and with public bodies in contradistinction to private individuals. In fact, so numerous are such contingent clauses, that in few cases can a contract be entered into where the party who makes same has not some game of chance which may end profitably or the reverse. This practice, Mr. Bermingham went on to show, is neither conducive to the healthy development of business, nor founded on a spirit of equity. It is productive of disappointment, disagreement, and wrangling, until nothing outside the strict letter of the contract will be thought of, and the settlement finally becomes one of trouble and perhaps litigation. Why not, he asked, have contracts founded on a firm and strictly definite basis? Why not the preliminary difficulties disposed of by the surveyor, as far as possible, at the cost of the proper party—the employer; and such things as extra depth of foundations, increased expenditure in protecting other properties, the connecting staunchly of adjoining buildings, and other such considerations, be kept separate, to be paid for over and above the contract made, according to the actual outlay or value?

Referring to the questions of the quantity-surveyor's responsibility and charges, the author said that to what extent the surveyor was responsible was a point most unsettled even in London practice or as sanctioned by law, and with all the faults of the existing system it is difficult to consider how he could honestly discharge his duties and feel the responsibility resting upon him. Why should either the builder or surveyor be asked to pay for work which, though omitted from the bill of quantities, from which the total value is derived, the employer is directly receiving the equivalent for? Why should he not honestly pay for it?

On the subject of charges, little can be said. Among surveyors, as among architects and every other class of men, you will find some who will undermine any regulated scale, and others, not content with it, will adopt one more remunerative, and what they consider themselves entitled to for the services they render. You cannot control this, but you can render a permanent service by giving forth to the profession—under the most important professional body constituted in this country—a scale of fees ascertained from the practices and customs extant.

In conclusion, Mr. Bermingham made the following suggestions:

Let every architect employ his own surveyor in all cases, and let him be paid either by his clients directly, or through the architect.

Let fair, equitable, and definite contracts be formed, and the contractor be paid separately for all contingent works outside same.

Let the contractor have the option, before signing the contract, of assuming the whole responsibility of the surveyor's work, no errors in same to be of any avail, or claim against any party concerned; or let him sign it, having the bill of quantities forming part of contract to be used as a schedule of prices, and in case errors occur, the amount of same to be either added to or deducted from the contract amount when they exceeded a certain percentage of variation.

Let sufficient details be given beforehand by the architect. Let him examine the plans and specification when they pass from the surveyor's hands, carefully noted and revised by him.

Let all variations from the contract be arrived at by the surveyor independently between party and party, unless in such extensive works where two surveyors would be advisable.

Let a spirit of mutual confidence be inspired among all concerned by having the contracts on a fair, equitable basis for both parties, by careful selection of respectable and upright contractors, and by reposing confidence in surveyors who seek to impartially administer the trust placed in their hands.

Let every question of importance be decided by tho architect as an independent arbitrator, when worked out and referred to him by the surveyor; and in any case where the parties concerned will not abide by the decision, let a clause in specification refer same to the friendly arbitration of members of the Institute chosen by each, a proceeding found to work so peacefully and amicably with merchants and their Chambers of Commerce, thereby avoiding all law.

Lastly, and above all, let there be unity of feeling and action in the general endeavour to eradicate the evils existing. Let some scheme be fostered that will carry us out of this difficulty, perplexity, and trouble into a future where the man who wishes to build a mansion can do so with the same feeling of confidence, security, and pleasure as he would the furniture to decorate it.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE following correspondence refers to the subject of our first leading article this week:—

21, Upper Bedford-place, Russell-square,
9th March, 1871.

Dear Sir,

The discussion which took place at the meeting of Members on Monday last was of such a nature, as to oblige me to write to the President, resigning my office of Honorary Secretary. I think it but respectful to send you a copy of my letter, and to express my liveliest gratitude to yourself and the other Members of the Institute for the kind consideration I have ever received at your and their hands.

Believe me, my dear Sir,
Most faithfully yours,
Thos. L. Donaldson.

Copy.

Mr. President, 8th March, 1871.

The proposition, which you have formally submitted to the Royal Institute of British Architects, that the present Assistant paid Secretary should be raised to the office of Chief (not Honorary) Secretary and Member of the Council, and should have the sole control and management, under the Council, of the affairs of the Institute, so that, in effect also, the other, the Honorary Secretary, would be subordinate to him, is an arrangement which I think will be very prejudicial to the official department of the Institute, and consequently to its best interests.

This leaves no other step for me to take, or any other Member of the Profession who has any respect for himself as Honorary Secretary, than to decline to be put in such humiliating subordination.

I therefore place my resignation unreservedly in your hands, and I must request that my name be withdrawn from the list of Fellows.

I desire not for one moment to stand between the wishes of the Members and what *they* may consider best for the interests of the Body. I beg them to consider this as only one more last instance, painful as it must be to me, of the affection and devotion I feel for an Institution in whose formation I was an humble instrument, and to whose success I have devoted the most earnest services and unswerving duty during six and thirty years. I have done so without any other object or desire of reward than the consciousness of having served the Profession.

Believe me, Mr. President,
Very faithfully yours,
Thos. L. Donaldson.

Thos. H. Wyatt, Esq. President, R.I.B.A.

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ARTISANS', LABOURERS', AND GENERAL DWELLINGS COMPANY.

THE fourth annual meeting and soirée of this company was held on Wednesday evening last at Radley's Hotel, Bridge-street, Blackfriars, the Earl of Shaftesbury in the chair. Mr. J. Baxter Langley, the Chairman of the Board of Directors, before proceeding to make a statement of the affairs of the company, announced that letters had been received from Lord Derby, Dean Stanley, Mr. John Stuart Mill, and other distinguished noblemen and gentlemen, expressing regret at being unable to attend. From the report it appears that at the close of last year the share capital amounted to £3,014; it is now increased to £6,000, and the uncalled capital has risen from £15,000 to £26,000. There are now 1,250 shareholders, being an increase of 290 during the year. Notwithstanding that the past year has been one of great depression, nevertheless the directors are enabled to pay interest of 5 per cent. on deposits and 6 per cent. dividend on share capital, leaving a balance of £401 7s. 6d. to carry forward to a reserve fund. The company has just completed the erection of a large number of improved workmen's dwellings, with lecture-hall and school-rooms. The greatest attention has been paid to ventilation and all sanitary arrangements, and dry ash closets (the patent of which the company has purchased) are used in preference to water-closets. The directors are preparing plans for the erection of their model dwellings in London, Liverpool, and other districts. While the company is thus doing a beneficent work, it is a business undertaking, and pledged to make its plans profitable to the shareholders as well as honourable to them. With limited capital, and without the aid of Government loans, the company has paid 7½ per cent. In these days, when the people are becoming conscious of the error of suffering the existence of houses of "immoral construction," it is creditable to this company that it builds no houses of less than five rooms. The tenant pays only 4s. 6d. per week for a five-roomed house, including scullery and cellar additional. It is hoped that before the next annual meeting 200 more dwellings may be erected by the company. Mr. Baxter Langley, having commented on and explained the report, the meeting was ably addressed by Mr. Hugh Birley, M.P. for Manchester, and by Mr. William Pare (long connected with the co-operative movement), Mr. A. A. Walton (of Brecon, and who had been much engaged in arbitration and conciliation), Mr. Illingworth (M.P. for Knaresborough), Mr. Kelsall (superintendent of the Company's buildings at Manchester), Mr. A. Bishop (plasterer, and one of the Company's tenants); and the Chairman (Lord Shaftesbury), in conclusion, delivered a most eloquent address on the good such companies were doing and would do for the advancement of public and social morality. On the motion of Mr. Joseph Leicester, seconded by Mr. Edward Holden, the largest shareholder of the company, a vote of thanks was passed to the chairman, and the proceedings terminated.

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BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE fourth annual general meeting of this Institution was held on Tuesday week, the 28th ult., at the office, 14, Bedford-row, W.C. Mr. Benjamin Hannen (Holland and Hannen), the President for the ensuing year, in the chair. There was a good attendance.

The Chairman, in moving the adoption of the report, remarked that though the increase of the subscriptions received during the past year was but little over the amount received in the preceding year, the fact that there was an increase in spite of the war on the continent (which has affected all charitable institutions), and of the depressed state of the building trades, was a very gratifying one. He approved of the plan of granting pensions only to the amount of one half the annual subscriptions received, and of funding all donations, which formed a good groundwork for the permanent relief of the pensioners of the Institution. With regard to the Asylum Fund, he said he noticed that the rules stated that the objects of the Institution were the relief of the decayed builders' clerks and the maintenance and education of their children. The name "Asylum" Fund, he remarked, seemed to suggest something in the shape of almshouses, but upon that point the builders were more likely to have correct views than most societies, and they had come to the conclusion that pensions granted to their decayed members was the way to effect the greatest good with the means at their disposal.

Mr. H. T. Boyes, in seconding the adoption of the report, thanked Mr. Hannen for his remarks about the Asylum Fund, which should, with more propriety, be called the "Orphan" Fund, and explained that there was a rule that when this fund reached £1,000, a general meeting should be held to consider its appropriation. A motion had been made about eighteen months ago that life presentations in one of the existing orphan asylums should be purchased in the names of the President or Trustees, and that by means of life insurances upon those names the Institution should have perpetually the means of renewing such presentations; the cost of the first purchase would thus be the only outlay required, and he hoped still that this proposition might be entertained by the members of the Institution, and education afforded to the children of some of the pensioners.

Mr. Thos. Stirling said he hoped there would be another election of pensioners in November, and announced that Mr. John Waldram (Hill, Keddell & Waldram) was willing to give two guineas to the unsuccessful candidate at this election, provided four other gentlemen would do the same.

The motion having been carried unanimously, the officers for the ensuing year were re-elected.

Mr. Alfred R. Smith then proposed various alterations in the rules, so as to admit the widowed mothers of builders' clerks within the pale of eligible candidates for relief, remarking that one who had been entirely dependent on a son for support would be in as bad a position as a widow, and that every circumstance tended to show that the relief would not be required for so long a period as in the case of a widow, the majority of whom would be comparatively young.

Mr. Ward objected that it was entirely altering the objects and principles of the Institution, and that in its present youth it was taxed sufficiently to meet existing claims.

Considerable discussion took place, in which Messrs. Marcus Bourno Newton, Thos. F. Cooke, R. Ball, and H. I. Wheatley took part, several of the speakers expressing great sympathy with the objects of Mr. Smith's propositions, which were severally brought forward and negatived.

A cordial vote of thanks to Mr. Thos. Stirling for the kind and valuable assistance he had rendered to the society, and another to Mr. Hannen for his able conduct of the business of the meeting brought the proceedings to a conclusion.

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COMPETITIONS.

Birmingham Assize Courts.—Our Birmingham correspondent informs us that twenty-seven sets of designs have been sent in by competitors, and Mr. Waterhouse is appointed to advise. Our correspondent is not inclined to think that Classic will be adopted; and he even doubts whether the building will be erected at all, as the town has its hands full.

Wharfedale Poor-law Union.—The New Workhouse Plans.—On Friday last a special meeting of the guardians of the Wharfedale Poor-law Union was held at Otley, for the purpose of selecting a plan for the new workhouse out of twenty designs which had been furnished. The *ex-officio* guardians present were — Captain Dyneley, Mr. F. Darwin, and Mr. Fawkes, together with thirty-three of the elected guardians. The chairman (Mr. Thomas Denison, of Yeadon) presided. The report of the Building Committee was read, in which plans bearing the mottoes "Alpha," in black, and "Economy," in blue, were recommended for the first and second prizes respectively. It was moved and seconded that the report should be adopted. A good deal of discussion ensued, and various amendments were submitted. Ultimately, however, the original motion was carried. The mottoes of the various plans were then opened, and it was found that the designs bearing the motto "Alpha" in black had been sent in by Messrs. C. S. & A. J. Nelson, of Leeds, to whom the first prize of £50 was awarded; Mr. C. E. Taylor, of the firm of Taylor & Garthwaite, of Bradford, the author of the designs bearing the motto "Economy" in blue, being entitled to the second prize of £25. The following is the list of competitors:—Mr. E. W. Stephens, London; Messrs. Hope & Jardine, Bradford; Mr. J. W. Morris, London; Messrs. Webbe & Wheeler, London; Mr. J. F. Cobb, Newport; Mr. John Walker, London; Mr. R. K. Blessbrey, Middlesbrough; Messrs. Robinson & Marshall, Bradford; Mr. T. Ambler, Leeds; Mr. Alex. Stenning, London; Mr. W. Hill, Leeds; Mr. James Fisher, Birkenhead; Mr. Chas. Fowler, Leeds; Mr. R. B. Dixon, Darlington; Mr. Thomas Clark, Bradford and Yeadon. Two of the designs, bearing the mottoes "Wharfe" and "Utility," had not the names of their authors accompanying them.

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SCHOOLS OF ART.

Nottingham.—The annual meeting of the Nottingham School of Art was held last Thursday week under the presidency of Lord Belper. The annual report was of a most satisfactory character. The number of students who attended the school during the past year was 503, showing an increase of 94 since the previous year. The particulars of the numbers attending each class, and the occupations of the students, &c., are duly set forth in the report. The general work of the school has been considerably in advance of any former years, as will be seen by the Government reports. The number of works sent up to London for inspection was 1,800, or exactly 50 per cent., more than the average proportion per student throughout the country. A much greater proportion of the works were in the advanced stages than in the previous year. There were 292 works in the higher stages of instruction, and 1,508 in the elementary stages. The school has for the third consecutive year taken the highest number of prizes among Provincial Schools, a result due to the ability and energy of the head master. Mr. Rawle, who for the three years that prize bonuses have been given by the Government, has taken a greater amount than any other master in the country.

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PARLIAMENTARY NOTES.

The New Public Offices.—Lord J. Manners asked the First Commissioner of Works on Monday, when it was intended to remove the block of houses between Parliament-street and King-street, facing the new Home and Colonial Offices.—Mr. Ayrton said that a portion of the buildings in question were now occupied as public offices which were very much needed, and the other portion was occupied under a special arrangement, so that the whole building could be pulled down as soon as the new Home and Colonial Offices were fully erected. The back part of it had already been demolished, but there was no object in pulling down the front part at present. —Lord J. Manners asked whether the thoroughfare at that point did not require to be widened.—Mr. Ayrton said that point involved the question whether a portion of public land was to be given up for the purpose of widening the street. There was no Act of Parliament which directed or authorized any such application of the property. Probably the best method of effecting the widening of the street would be by retaining the land in front of the new Home and Colonial Offices.

Indian College for Engineers.—Mr. Dickinson, on Thursday week, asked the Under Secretary of State for India what would be the charge on the revenues of India of the proposed College for Engineers; what the building will cost; what would be the annual cost of the establishment; and whether it is in contemplation to attach any and what retiring pensions in favour of professors or others employed in the institution.—Mr. Grant Duff: There will be no charge on the revenues of India on account of the Engineering College; the fees will be slightly in excess of the charges, including interest on the buildings and plant, say on 90,000*l.* There will be 11 professors and instructors on salaries varying from 700*l.* to 300*l*, per annum. Of these nine will be entitled to pensions under the provisions of the Superannuation Act, and two will not be entitled to pensions. If my hon. friend would like the figures here they are:—Annual sanctioned charge for college, as per regulations of Secretary of State in council, 18,350*l.*; interest on buildings, &c., say, 90,000*l.* at 4 per cent., 3,600*l.*; total, 21,950. Fees, 150 students at 150*l.*, 22,500*l.*; difference, 550*l.*

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Building Intelligence.

CHURCHES AND CHAPELS.

Halifax.—A new Unitarian chapel is to be built at Halifax, from the designs by Mr. Davis, of Leeds. The church consists of nave and transepts. There will be a town and spire rising to a height of 116ft. The contracts for the new building are all let to local tradesmen.

Salisbury Diocesan Church Building Association.—The annual meeting of this Association was held at Salisbury on Tuesday week. From the report it appeared that six applications for aid had been made to the Association during the year 1870, two on behalf of new churches, and the remainder towards restoring or enlarging existing buildings. In all these cases grants have been made amounting in the aggregate to £515, meeting an estimated expenditure of £8,285, and helping to provide 718 additional sittings. The new churches for which aid was granted were one for the extra-parochial district of Chute Forest, and a new district church at Portland, and those aided in being restored or enlarged were Christ Church, Warminster, Iwerne Minster, Tisbury, and Britford. The following churches which have received assistance from the Association have been reopened for service during the year—viz., Churches consecrated: S. Thomas, Trowbridge, West Lulworth, and Hinton Martell; Churches restored: Bloxworth, Cerne Abbas, Odstock, Silton, Turnworth, Westwood, and Whiteparish. The diocesan architect has inspected, with a view to future restoration, the churches at Stower Provost, Milborne S. Andrew, Erlestoke, and West Harnworth.

BUILDINGS.

Athenæum, Camden-road.—The hall—the portion at present being built—will be about 60ft. by 50ft., formed by a centre part 33ft. high, with wings irregular on plan, 20ft. high. The ceiling is semi-octagonal in section, with circular ribs of principals dividing it into five bays in its length. The wings are ceiled by arches transversely from the side of the centre part, so that the irregularity of plan is only noticeable in the lower part of the room. There will be four doors as exits from the hall, one at each corner of the room. Under the platform end of the hall will be the retiring rooms, and a staircase down will communicate with them, as well as give direct communication underneath from one side of the platform to the other. The building, externally, will be of brick, with red brick plinth strings, cornices, and architraves, the enrichments being of red terra cotta. The interior and exterior of the building will be bold and simple in design, of Classical character. The contract for the hall is £1,579, and Messrs. Gough and Lawton are the contractors. The other part of the building, which will form the second contract, will comprise a reading-room, 18ft. high, library and cloak rooms on ground floor, and a Mezzanine and first floor of rooms of various sizes, as well as a basement devoted to the keeper's residence, &c. The architect of the building is Mr. Frederick R. Mecson.

Chiselhurst.—The foundation-stone of a new asylum for aged governesses was laid at Chiselhurst on Saturday last. The building is being erected under the auspices of the Governess's Benevolent Institution, and the site is near the old church, on the north side of the road leading from Chiselhurst Common to S. Mary Cray. The style adopted by the architect, Mr. M. Wyatt, is a combination of Elizabethan and Tudor, the low pitch unavoidable in a row of separate cottages or dwellings being relieved by a prominent gable front and porch to the centre house, which is to be occupied by the lady superintendent. When complete, the asylum will form three sides of a quadrangle, consisting of twenty-four separate dwellings, each of which is designed for one annuitant and her servant, and will comprise four rooms, kitchen, scullery, and the usual offices. A verandah will shelter the front entrances. The cost of the twenty-four houses is estimated at £15,000, a contract for the erection of the first half having been taken by Mr. Tongue, of Plumstead, for about half that sum.

Oxford.—The foundation-stone of a new school for boys, for the district of Cowley S. John, was laid on Tuesday last by the Rev. Father Grafton. The school will measure 70ft. long by 30ft. wide, and comprise two class rooms each 16ft. square, and a general room. with lavatory and the usual offices attached. The building will be of brick, with stone dressings to the windows and an open timber roof, covered with red tiles. The total cost is set down at £1150. The architect is Mr. Buckeridge, the builders Messrs. J. Castle & Co.

Swansea.—The alterations and additions to the Guildhall, which have been some months in progress under the direction of Mr. C. J. Phipps, F.S.A., architect, of London, are now complete, and the Assize Courts were opened by the judges on Tuesday. The works comprise an entire rearrangement of the internal fittings in both Courts, with galleries for the public and Grand Jury; a new wing on one side, with two private rooms for judges, rooms for High Sheriff, the Bar, and others; on other side, Grand Jury rooms and residence for hall keeper; on ground floor the office, for the Corporation officials have been doubled, and under courts twenty separate cells constructed, from corridor of which are staircases to docks in both courts; separate rooms are provided for the Petty Jury and witnesses in each court, with all proper conveniences. The contractor has been Mr. John Everal, of Great Malvern. The cost, exclusive of furnishing, has been just over £3,000. Mr. Phipp's plans were chosen in competition.

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TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

THE *BUILDING NEWS* SKETCH BOOK.

J. H., a contributor, says "Would it not be better to give, the polling, or rather, voting for the prizes in Friday's issue? Politicians know the value of ascertaining the state of the poll as it progresses. I don't anticipate having a single vote, and therefore don't intend to vote for anybody else." We think it would be a wrong principle to declare the state of the poll before it is decided. "J. H." is equally wrong in his reason for not voting. He simply abdicates his functions because he thinks his own sketch is not up to the mark. We may tell him, however, that he has a vote recorded in his favour. He and others are informed that the poll closes on Wednesday evening next.

Received.—J. N. L., Vinis, H. G. W. D., C. L., F. R. M. T. W. S., E. G, J. H C., O. N., J. P. S., C. B. A., J. H., W. W., E. F., S & Son, S. H & Co., J. A., Art Engraver, C. B. M., J. H. W., E. P. N, J. J., E. S., T. J. T.

J. C. J.—The MS. did not come to hand.

W. J. Rolfe.—Next week.

G. T. Chough.—Thanks.

W. H. Wilkinson.—Mr. Godwin's design for the Bristol, Assize Courts will be given.

J. Hicks.—Sketch to hand.

Utile Dulci.—Perspective and plan to hand.

Correspondence.

CENTRAL HALL OF ARTS AND SCIENCES.

To the Editor of the Building News.

Sir,—I beg to decline all controversy with Mr. Redgrave, and to state that I much regret that anything in my letter, inserted, p. 154, should have caused such a paroxysm of temper as almost to make him forget the customary courtesy usual between gentlemen. Also, that I consider him justified in making use of any means in his power to defend the handiworks of himself and his friends from any supposed attacks by me. I say supposed, decidedly, because there is no word in my communication derogatory of that "magnificent building," erected and completed entirely by the people's money

I complain only of misuse and misnomer; for, as at present arranged, it is wholly unfit for scientific lectures, as future experience will amply demonstrate. In regard to the Coliseum at Rome, which seems to have somewhat shattered Mr. Redgrave's nerves, I beg to inform him that I resided for some years in its immediate neighbourhood, long before he himself was born. As I have been challenged I intend, at a future period, with your permission, to offer some further observations upon the Central Hall of Arts and Sciences, that is to say, when it shall have been fully opened to the public.—I am, &c., C. E.

THE *BUILDING NEWS* SKETCH BOOK.

Sir,—In respect to the voting for the "Sketch Book" prizes, allow me to suggest that every contributor be compelled to record his votes. or be disqualified from receiving a prize; otherwise those who vote will lessen their chances of gaining a prize by increasing the votes of their opponents, who perhaps have not voted.

I should like to understand the exact meaning of the statement, "the least number of votes will gain the third prize." Suppose several sketches get no votes. How will the third prize then be given? Will the letter of the text be adhered to, or will no votes be counted lower than one? If the latter case, will the arbitrator choose the best or the worst of the no-vote sketches?

A suitable understanding as to the above queries would, no doubt, guide contributors in their voting.—I am, &c., Contributor.

[We don't see how we can *compel* contributors to vote, but it is only fair that they should. The phrase "the least number of votes will gain the third prize, is not a happy one. What, of course, is meant, is the third prize will be awarded to the sketch which has the third highest number of votes.—Ed.]

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Intercommunication.

QUESTIONS.

[2141] HOUR GLASS.—Can any of your correspondents kindly oblige me with a rough sketch of an hour glass of about the middle of the fifteenth century?—Time.

[2142] COMMUNICATION WITH GARDENER'S HOUSE.—My gardener's house is, say, 300 yards from my house, and I wish to have some communication with it in case of him being wanted in the night, and in consequence of the roads and shrubberios, if I use bell-wires I cannot have them acting for long, and having seen somewhere that by laying down a small tube and having a piston at the house end, and forcing in the air I could ring a bell, Can you or any of your correspondents tell me how I could do this, and oblige?—Camjee Wadjee.

[2143] SEWER AUTHORITY. — Can any readers oblige by giving their opinion on the following?—The sewer authority of A construct a sewer which is declared to be a private improvement, and order the same to be charged upon the adjoining house-owners and occupiers by rates extending over six years. Subsequently, the sewer authority make an order upon the overseers of A for payment of the money spent in making the foregoing sewer, to be paid out of the poor-rate. No notice is given to the overseers that the money was wanted for the purposes of this private improvement. The overseers pay the amount ordered. After payment by the overseers the sewer authority call upon the persons whose properties adjoin for a private improvement rate, and summon them, upon default, before the magistrates. Is it not a fatal objection to the rate that it is already paid? There was a large drain (sufficient for the purpose) before the new sewer was made. See the effect of Section 45, of Public Health Act, 1848, incorporated with Sewage Utilisation Act, 1865. There were other irregularities. Cannot an objection be raised before the magistrates that the rate is bad? The statutes bearing upon the subject appear to be the Sanitary Acts, 1866 and 1868, the Public Health Act, 1848, s. 90, *et seq.*, and the Sewage Utilisation Act, 1865.—W. W.

[2144] BLUE LIAS FOR PLASTERING.—Will some one kindly give some information respecting the use of the above on brick and lath for finished walls and ceilings? If economical as compared with chalk lime; and if necessary to finish off with setting coat of chalk lime putty; if there is any advantage in its powers of resisting damp? I have equal facalities for getting either.—Lias.

[2145] BURNING CLAY.—Will some one kindly give me the process of burning clay into ballast, with the view of using the coarse on paths and the fine on new made garden?—Burnt Clay.

[2146] BRICKS.—Will some correspondent kindly inform me where the bricks used in the erection of Mr. Street's church, St. James-the-Less, Garden-street, Westminster, were manufactured?—A. B.

[2147] HERRING-BONE BRIDGING.—Will some eader kindly give an explanation of what "herring-bone ridgin " is?—Ixion.

[2148] ANTILL'S PATENT TRAP.—Can any of your readers tell me where Antill's patent trap for sinks is to be obtained, and the price? Also, if it is satisfactory in preventing stench?—A Beaver.

[2149] PRICE OF BRICKWORK.—Can any of your readers kindly inform me of the price of brickwork in the neighbourhood of West Bromwich?—Inquirer.

[2150.] SURVEYING DILAPIDATIONS.—Will some of your readers kindly say if a rector or vicar, as the case may be, is liable for the dilapidation of chancel archway; or whether this is a portion of the fabric, which together with the nave, &c, the churchwardens are bound by law to look after and keep in decent repair? Again, with regard to mortuary chapels, &c., separated by archways from the chancel, whose duty is it to keep in repair the chapels, &c., and said archways? Will also one of your readers, who has had a good experience in valuing ecclesiastical dilapidations, say if it is customary for surveyors to walk round and examine the state of every fence belonging to the benefice glebe lands?—A Reader.

[2151] PRESERVING PENCIL DRAWINGS.—May I take the liberty of asking you or some of your readers to kindly inform me what will prevent lead from rubbing off a pencil drawing which has recently been finished, and an explanation of making and using it?—W. D. J.

[2152] VANISHING-POINT.—Can you kindly inform me how to find the vanishing-point of interior perspective?—C. A. Priestley.

[2153] DAMP.—Can any one recommend a cure for damp exuding on the plaster of a press in an outside wall, the back walling of the press being one brick thick, with hollow space between? Is there any composition which, applied to the plaster inside, would cure the evil?—W.

[2154] ISOMETRICAL DRAWING.—Will your correspondent, "M. G. R" kindly inform me where T. Sopwith's, F.G.S., "Treatise on Isometrical Drawing" can be obtained? Pupil.

[2155] NEW CORPORATE BUILDINGS, BIRMINGHAM.—Will any of your readers inform me whether the competition designs for the above will be publicly exhibited; if so, when, and how admission is to be obtained?—Staff's.

[2156] OLD AND NEW BRICKWORK.—What method should be adopted to tie in the new with the old brickwork when carrying up a chimney-breast against an adjoining party wall?—Tyro.

[2157] SECURING PLATES.—I shall be glad to know methods of securing plates when inserted in cases of repairs, and the underdrawing is lashed to spars?—M. P.

[2158] LARGEST STONE DOME.—What is the diameter of the largest stone dome?—X. Y.

[2159] ANCIENT STONE SPIRES.—What is the average thickness of the shell of ancient stone spires?—D. M.

REPLIES.

[2134] REMOVAL OF ROSE TREES—No.—F.

[2136] SOLE CONTRACTS.—I beg to assure "A Subscriber" that he is very properly advised. I speak from experience, being in practice as a surveyor and valuer. Were he to let the works solely to one contractor that contractor would re-let the different branches (excepting his own, which would probably be that of a carpenter and joiner), and add 5 per cent. to the several sums for his trouble; and probably the masters of those different branches would insure themselves against risk of failure, or otherwise, of the first contractor, by putting high prices. There is everything favourable to the proprietor in letting the works separately, while it entails extra labour, expense, and consequently responsibility upon the architect.—Surveyor.

[2136] SOLE CONTRACTS.—Much can be adduced in favour of both methods, but from being engaged in working several varieties in contracts would strongly advocate sole contracting, deeming it less costly and easier worked. In sole contracting one responsible person alone has to be dealt with; but the alternative is "confusion worse confounded," involving multiplicity of contracts, drawings, quantities, specifications, arrangements, superintendence (amounting to surveillance), annoyance, certificates, payments, and adjustment of accounts, and involving a total annihilation of anything like order, method, or responsibility. I could enumerate several converts, erst-while sticklers for the separate trade contract mode. Sole contracting is the safest, confers most benefit on all concerned, and is gaining, certainly not losing ground.—F.

[2136] SOLE CONTRACTS.—"Subscriber" could not do better than take the advice of his architect, and by all means let the work to separate contractors; he will find it more economical, and better, indeed, for all parties concerned. I used to let a great deal of work to sole contractors, but I never do it now, and don't intend again, because some time ago I estimated for joiner, plasterer, plumber, and slaters' work from one individual (the joiner being sole contractor); the amount estimated was about £800, inclusive of the ground works. After the job was squared up, finished, and paid, the joiner, who was sole contractor, became bankrupt, and the plumber, plasterer, and slater had to take 5s. per pound for their share. This is one great evil arising out of sole contracts in Scotland.—Richt Wrangs Naebody.

[2137] FOUNTAINS.—"J. F. S." will have to pump the water up to a cistern, elevated about 22ft. above level of ground at fountain, and if he then connects the cistern with fountain by a pipe, he will get sufficient force to throw the water to the height he requires.—A. W.

Our Office Table.

Society for the Encouragement of the Fine Arts.—On Thursday week, the 2nd instant, Mr. Hyde Clarke, D.C.L., delivered a lecture at the rooms of this society, 9, Conduit-street, Regent-street, "On the Common Elements of Beauty in Race in Georgia, Circassia, the Holy Land, and the British Isles," in which he brought forward a new theory of the principle on which a general standard of beauty in art has been accepted in Classic times and in the modern age. Dr. Chr. Dresser presided. [A full report of the lecture is in type, and will appear next week.]

Imparting a Yellowish Hue to White Marble.—M. R. Weber has made known through a German journal, the hitherto unknown fact that alcoholic solutions of perchloride of iron are not precipitated by carbonate of lime, and may therefore be applied in different degrees of concentration to impart a more or less deep yellow hue to white marble.

Free Lectures on Geology.—Dr. Cobbold, F.R.S., will commence a course of twelve lectures on geology (being the Swiney Lectures), to-morrow (Saturday) evening, at eight o'clock, at the Museum of Practical Geology, Jermyn-street. The lectures will be continued on successive Saturday evenings. The admission is free, and architects' assistants and pupils and workmen connected with the building trades will do well to embrace this opportunity of instruction in a science which has considerable bearing on their pursuits.

The Site of Newgate Market.—Last week the site of the old Newgate Market was offered for sale by Messrs. Winstanley and Horwood, under directions from the Markets Improvement Committee of the City of London, and was sold in one lot for £20,000, subject to the conditions approved by the committee, and also by the Dean and Chapter of S. Paul's, by which arcades or passage ways 10ft. in width are reserved from north to south, and from east to west.

Improved Industrial Dwellings.—A week or two ago Miss Burdett Coutts entered into an agreement by which all the land remaining vacant on the north side of Columbia Market, and also the small unoccupied piece on the south (adjoining Angela-gardens) will be built over with good three-storied houses during the present year. We (*Hackney Express*) now learn that Miss Coutts has accepted an offer for a lease of 330ft. of frontage on the south side of Crabtree-row made to her by the Improved Industrial Dwellings Company. The company are to have possession of the site on the 25th inst., and within twelve months contract to complete their buildings, at a cost of not less than £15,000.

The Gray's Inn-road Burial-ground. — A movement has been set on foot in the Holborn district, under the auspices of Dr. Stallard and the Rev. Dr. Worthington, of Holy Trinity Church, having for its object the removal of what (as Dr. Stallard said) is a scandal to the parish, viz., the present condition of the Gray's Inn-road burial-ground. It is proposed to utilise a portion of the ground for the erection of schools for 700 children, and to lay out the remainder as a public recreation-ground. Steps are being taken to procure the necessary Act of Parliament.

Metropolitan Tramways.—On Saturday last the formal opening of tramway communication between the eastern end of Greenwich and the New-cross road, near to Peckham, took place, the directors of the Pimlico, Peckham, and Greenwich Tramway Company, together with the whole of the members of the Greenwich District Board of Works and other parochial officials who had been invited, assembling on the occasion.

Progress of the Thames Embankment.—On Saturday last the loop line of the Victoria Embankment running from Somerset House on the west, to the Temple-gardens on the east, was nearly completed, only a few more stones having to be laid down and the roadway rolled. There is now an approach from Surry-street on the west, and from Arundel-street and Essex-street on the east end of the loop line. The approach from Norfolk-street, the principal thoroughfare from the Strand, is at preesnt in rather a rough state, but it is open for pedestrians, and has already proved a great convenience.

The New Sovereign.—The Right Hon. the Master of the Mint is to be congratulated on his last achievement, says the *Art Journal.* Congratulated, that is to say, if the new coin is to be regarded from one point of view, and weighed in one particnlar balance. If it be desirable that the gold currency of Great Britain should be made the symbol of the adoption of a certain set of views by the administration—if it be wise to proclaim to the world, by the widely-circulating testimony of the English sovereign, that the rulers of England are contentedly or contemptuously ignorant of fine art—if it be satisfactory to furnish abundant proof that, in the direction of the English Mint, not only artistic talent, but also mechanical excellence, are entirely disregarded—the new sovereign must be held to be a great success. For this is what it does, upon the face of it—it bears the same relation to the noble gold coins of the best period of our currency that a print from a slovenly cliché bears to a proof engraving. It is a crucial instance of the difference between what is cheap and what is good. It betrays an equal ignorance of the laws that so regulate a coinage as to give it historic value, and of those which regard either its æsthetic propriety or its artistic merit. The only thing left for its originators to regret is that existing prejudices have prevented them from stamping their new issue in aluminium or Abyssinian gold.

Liverpool Architectural and Archæological Society, Colquit-street. — The tenth meeting of this session was held at the Royal Institution, Liverpool, on Wednesday Evening last. A paper was read by Mr. Jas. M. Hay, " On Entasis: its Use and Misapplication in Design," accompanied by illustrations.

White's Club-house. –The sale of this freehold property took place on Tuesday, at the Auction Mart, City, by Messrs. Chinnock, Galsworthy, & Chinnock, of Waterloo-place. As an investment, it appeared that the rental was £2,100 per annum for eleven years, when the lease to the club expires. The sum realized was £46,000, the purchaser being Mr. H. W. Eaton, M.P. It was at first supposed that the club had secured the premises in which they have been so long located, but this does not appear to be the case, Mr. Eaton having purchased the property for investment.

City Improvements.—At the meeting of the City Commissioners of Sewers on Tuesday last, it was announced that at a meeting of the Works and General Purposes Committee of the Metropolitan Board of Works, held the preceding day, it was agreed to pay half the cost of acquiring five houses for widening Queen-street, Cheapside, between New-street and Pancras-lane. The total purchase-money required was estimated at £25,334. The Committee would also recommend the Board to pay half the cost of purchasing two slips of land in Upper Thames-street for the proposed widening of the same. The Finance and Improvement Committee of the Commission were empowered, agreeably to their request, to negotiate for the purchase of property in Lombard-street, in order to set back the frontages of the premises Nos. 37 and 38 in that street.

Statues in the Church of S. Denis. — A French correspondent of the *Pall Mall Gazette* gives a list of the statues inside the Cathedral of S. Denis which have been injured by carelessness, bombardment, or pillage. The most curious accident is certainly that which happened to S. Denis. The statue of the good saint, who is popularly supposed to have crossed a river with his head under his arm, was decapitated by a shell. The statue of Catherine de Medicis has two fingers cut off and stolen, and a gash from a sabre on her hands. Henry II. has lost not only two fingers, but the big toe of his right foot; Charles VI. his right hand; Duguesclin the hilt of his dagger; Charles V. both hands and his sceptre; Charles Martel a finger; Pepin le Bref has had his sceptre broken; and Louis XVI., besides receiving a cut across the nose, has been deprived of both his thumbs.

Discovery of Additional Hot Springs at Bath.—A leakage having occurred in the hot springs of the King's Bath, some excavations have been made in Abbey-place, with a view of discovering the cause. At a depth of 22ft. one, if not two, new springs have been discovered, yielding 20 gallons at least per minute, at a temperature of 110 deg. A number of Roman remains have been found in the excavations, together with a flooring of lead half an inch thick, resting upon concrete. It is supposed, therefore, that these particular springs were used by the Romans.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.*—Papers " On Tithes and Tithe Commutations." By Messrs. W. Sturge and J. Oakley. 8 p.m.

Royal Geographical Society.—" On Mr. Thomas Baines's Exploration of the Gold Region between the Limpopo and the Zambesi." By Dr. R. J. Mann.

Tuesday.—*Institution of Civil Engineers.*—"On Phonic Coast Fog Signals." By Mr. Alexander Beazeley, M. Inst. C.E. 8 p.m.

Wednesday.—*Society of Arts.*—8 p.m.

Thursday.—*Society for the Encouragement of the Fine Arts.*—" Heliotypy: its Application and Modes of Working fully illustrated." 8 p.m.

Friday.—*Civil and Mechanical Engineers' Society.*—" Some Small Domestic Engineerings." By Mr. W. Forsyth Black. 7.30 p.m.

Saturday.—*Associated Arts' Institute.*—Discussion, introduced by A. H. Wall. Thesis, " That the Aim of the Painter and of the Sculptor should be to represent Thoughts rather than Things." 8 p.m.

Saturday.—*Museum of Practical Geology, Jermyn-street, S. James's.* — Swiney Lectures on Geology. Lecture II. By Dr. Cobbold, F.R.S. 8 p.m.

Chips.

Paris was relit with gas on Friday last.

The meetings of the Associated Arts Institute will shortly be transferred to University College, Gower-street.

The second Exhibition of the Old Masters at the Royal Academy closed last Saturday, and has been even a greater success financially than the one of last year.

The programme for the opening of the Royal Albert Hall has been approved by Her Majesty the Queen, and will be found in our advertisement columns.

The laying out of the grounds round the Albert Memorial in Hyde-park is being rapidly accomplished, and great changes are being made in the walks and plantations of the Kensington-gardens.

The Architectural Selection Committee for the Exhibition of 1871 has now been raised to its full strength by the election of Mr. Fergusson, who had previously been nominated by the Architect tural Exhibition Society, but had resigned when that society became extinct.

The Committee of Selection for Fine Arts in the forthcoming Exhibition have held several meetings this week, and have decided to reject a large number of the works which have been sent in.

S. James's tower, Taunton, which has been in a dilapidated state for some years past, is being pulled down. A fac simile of it is to be built. Mr. Spiller, the builder of the Taunton Church College and Exeter Railway station, is the contractor.

A new school has been erected at Holywell-green, near Halifax, under the superintendence of Messrs. Horsfal, Wardle, and Patchett, of Halifax.

A Bill to confirm a scheme under the Metropolitan Commons Act, 1866, relating to Blackheath, was issued on Monday.

Considerable alterations and improvements have been made in the arrangement and extension of the artillery officers' library and messroom at Woolwich.

Steps are being taken to erect a new Wesleyan chapel near the Archway-road, Highgate, in lieu of the iron building which has done duty for the last seven years. The contemplated outlay is £4,500.

New premises have been erected in New Market-street, Bradford, as offices for the Bradford Third Equitable Benefit Building Society, from designs by Mr. T. C. Heape, architect, Mr. A. Niel being the contractor.

A temporary small-pox hospital has been erected by the Westminster Board of Works in Millbank-street, and it was opened on Wednesday last for the reception for patients.

In the Consistorial Court at Wells, on Tuesday week, Dr. Wallis, the deputy-judge, granted a faculty for the erection of figures in the pulpit and nave of S. Mary's Church, Taunton, and also of opening four new windows in the chancel.

The Finance Committee of the Court of Sewers Commissioners for the City of London has been instructed to prepare a report upon the present financial posi tion and future prospects of that body.

At their meeting on Tuesday last the City Commissioners of Sewers decided to pave Moorgate-street and Finsbury Pavement with three kinds of asphalte—the Val de Travers, Limmer's. and Barnett's, in order to test their respective merits.

Dr. Gibbon, the Medical Officer of Health of the Holborn District, has recommended that the provisions of the Artizans' and Labourers' Dwellings Act be enforced in the case of four houses in Brook-court, Brooke-street.

We are informed that the Prussian soldiers have done considerable damage to the sculpture at S. Denis, by chipping off portions of the fingers, toes, drapery, &c., of the statues, as memontos of their visit.

At length the City Commissioners of Sewers have resolved to build a mortuary upon the land secured for that purpose in Golden-lane, Barbican. The cost of the building will, it is estimated, be £5,800.

Timber Trade Review.

Prices March 7.—Per Petersburg standard hundred.—Quebec pine, 12ft. 3 by 11, 1st floated. 16*l* to 17*l*; do 2nd floated, 12*l* to 12*l* 10*s*; do 3rd floated. 8*l* to 9*l*; do 1st bright, 18*l* to 19 10*s*: do 2nd bright, 12*l* 15*s* to 13*l* 10*s*; do 3rd bright, 8*l* 10*s* to 9*l* 10*s*; Canadian 1st spruce, 9*l* 10*s* to 11*l*; do 2nd, 1*l* 10*s* to 9*l*; do 3rd, 7*l* 15*s* to 8*l* 5*s*; New Brunswick 1st spruce, 9*l* 10*s* to 11*l*; do 2nd, 8*l* to 8*l* 10*s*; do 3rd, 7*l* 10*s* to 7*l* 15*s*; do unsorted, 8*l* to 9*l* 10; Nova Scotia spruce, 7*l* 5*s* to 7*l* 15*s*; spruce battens, 7*l* to 7*l* 10*s*; United States pitch pine, 12*l* to 12*l* 10*s*; Swedish battens, 8*l* 10*s* to 10*l* 10*s*; Gefle and best Swedish deals, 10*l* 10*s* to 12*l* 10*s*; Swedish and Gothenburg mixed yellow, 10*l* to 10*l* 10*s*; do common & 3rds, 8*l* 10*s* to 9*l* 10*s*; Archangel best yellow, 12*l* 19*s* to 14*l* 10*s*; do 2nds, 9*l* 10*s* to 10*l*; Petersburg yellow, 13*l* to 13*l* 10*s*; Wyburg yellow, 9*l* 15*s* to 10*l* 10*s*; Finland and handsawn Swedish, 7*l* to 8*l*; Petersburg and Riga white, 8*l* 10*s* to 9*l* 5*s*.

Firewood, per cubic fathom.—Swedish red deal ends, 3*l* 15*s* to 4*l* 5*s*; Norway red and white boards, 3*l* to 3*l* 10*s*; do round and slabs, 2*l* 5*s* to 2*l* 15*s*.

Flooring, per square of 1in.—1st yellow, 7*s* 6*d* to 10*s* 6*d*; white, 7*s* to 9*s* 6*d*; 2nd qualities, 6*s* to 7*s*; matched boards (per square ⅝in. and ¾in.), 5*s* to 7*s* 6*d*.

Staves.—Bosnia single-barrel, per 1,200 pieces, 25*l* to 26*l*; United States pipe, 45*l* to 53*l*; hogshead, heavy and extra, 35*l* to 45*l*; do slight, 30*l* to 32*l*.

Teak, 12*l* to 13*l* per load; lancewood spars (fresh), 7*s* 6*d* to 8*d*; ordinary to fair, 3*s* to 5*s*.

Freights.—Quebec, 72*s* 6*d* to 75*s* per standard; 1*l* 7*s* and 1*l* 8*s* per load; Sweden, 2*l* 5*s* to 2*l* 7*s* 6*d* per standard; Dantzig and Memel, 15*s* per load; Riga, 17*s* 6*d* per load: Archangel, 72*s* 6*d*; Onega, 67*s* 6*d*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Metals.

Lead :—

Pig Foreign	per ton	£17	10	0	£17	12	6
„ English W.B.	do	19	10	0	19	12	6
„ Lead Co.	do	18	12	6	18	1	0
„ Other brands	do	18	2	6	18	5	0
Sheet Milled	do	18	10	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or Minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0		0	0	0
„ ground in oil	do	0					

Copper :—

British—Cake and Ingot	per ton	£73	0	0	74	0	0
Best Selected	do	75	0	0	76	0	0
Sheet	do	76	0	0	79	0	0
Bottoms	do	80	0	0	81	0	0
Australian	do	73	0	0	75	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	65	0	0	66	0	0
„ Refined ingot	do	71	0	0	72	10	0
Yellow Metal	per lb	0	0	6½	0	0	7¼

Iron :—

Pig 1 Scotland, cash	per ton	£2	1 2	7½	[0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
„ Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	7	6	6	10	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	15	0	10	0	0

Timber.

Teak load	£12	0	13	0
Quebec, red pine	3	15	4	15
„ yellow pine	4	5	5	5
St. John N.B. yellow	0	0	0	0
Quebec Oak, white	6	0	6	5
„ birch	3	15	5	0
„ elm	4	0	4	10
Dantzic oak	5	5	6	10
„ fir	2	12	4	10
Memel fir	3	0	4	5
Riga	3	5	3	10
Swedish	2	5	2	15
Masts, Quebec red pine	4	0	6	5
„ yellow pine	4	0	6	5
Lathwood, Dantzic, fm	3	0	5	0
„ St. Petersburg	5	0	5	10
Deals, pr C., 12 ft. by 3 by 9 in.,				
Quebec, white spruce	12	0	17	0
St. John, white spruce	12	10	14	0
Yellow pine, per reduced C.				
Canada, 1st quality	18	0	19	10
2nd do	12	15	13	10
Archangel, yellow	11	10	14	10
St. Petersburg, yel.	13	0	13	10

Finland	£7	0	£8	0
Memel	0	0	0	0
Gothenburg, yellow	8	10	10	10
„ white	8	10	9	10
Gefle, yellow	10	10	12	10
Soderham	8	10	12	0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10	0	12	10
Flooring boards, per	s.	d.	s.	d.
sq. of 1in., first yel	7	6	10	6
First white	7	0	9	6
Second qualities	6	0	7	0
Pumice Stone pr ton	6	0	8	0
Oils, &c.				
Seal, pale per ton	£38	0	0	0
Sperm body	84	0	84	5
Cod	35	10	36	0
Whale, Sth. Sea, pale	36	0	37	0
Olive, Gallipoli	49	0	49	10
Cocoanut, Cochin, ton	45	0	48	0
Palm, fine	38	10	0	0
Linseed	32	0	33	5
Rapeseed, Eng. pale	47	0	0	0
Cottonseed	28	0	34	0

Trade News.

TENDERS.

Strand.—For rebuilding No. 28, Holywell-street, Strand Mr. J. H. Rowley, architect. Quantities supplied by Mr. T. T. Green :—

Sharpington & Cole (accepted) ……… £701

Savernake (Wilts).—For the erection of the Savernake Cottage Hospital :—

Futcher, Salisbury ……… £2999
Roberts, London ……… 2955

Brixton.—For the erection of schools and class rooms in connection with the Wesleyan Chapel, Martyr-road, Brixton. Messrs. J. Tarring & Son, architects:—

Hill & Sons	£2137
Henshaw	1891
Scrivener	1799
Myers & Son	1794
Thompson	1780
Shepherd	1735

Brooklands.—For the erection and completion of three houses at Brooklands. Mr. Sherwin, architect. Quantities supplied:

Davidson	£1043 0
Ratcliffe	990 15
Winter	975 0
Herd & Eadie	956 0
Latham	950 15
Cardwell	915 0

City.—For nine warehouses, Monkwell-street, City. Mr. Herbert Ford, architect. Quantities supplied by Messrs. Hovenden & Heath:—

Gammon & Sons	£14919
Williams & Co	14877
Tongue	14675
Pritchard	14512
Stimpson	14316
Blease	14250
Perry & Co	14027
Dove Brothers	13887
Nightingale	13878
Browne & Robinson	13791
Crabb & Vaughan	13313
Conder	13077
Brass	13034
Myers & Sons	12896
Hill, Keddell & Waldram	12896
Scrivener & White	12745
Henshaw (accepted)	12653

Manchester.—For alterations and additions to premises in Deansgate, Manchester. Mr. Sherwin, architect. Quantities supplied:—

Statham & Sons	£1240
Winter	1190
Wade Bros.	1160
Ratcliffe	1107
Terras	1103
Wilson	1103
Herd & Eadie	1100
Cardwell	1095

For ornamental cast-iron fronts, and revolving steel shutters:

Clarke & Co.	£229 5

Manchester.—For the erection and completion of a ragged school and working men's church, Lombard-street Deansgate, Manchester. Mr. Sherwin, architect. Quantities supplied:—

Wade Bros.	£860
Terras	732
Statham & Sons	720
Winter	720
Herd & Eadie	688
Cardwell	685

Southwark.—For restorations and alterations to S. Jude's Church, St. George's-road, Southwark, for the Rev. John Mee:—

W. J. Mitchell (accepted)	£1100

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Fawsley (Northamptonshire), March 13.—For the erection of farm buildings. Mr. Waters, Fawsley Estate Office.

Leeds, March 25.—For the erection of offices and warehouses, for Messrs. Goodall, Backhouse, & Co., Leeds. William Bakewell, architect, 12, East-parade, Leeds.

Leeds March 25.—For the erection of shops and warehouses, for Mr. G. Newby, Leeds. William Bakewell, architect, 12, East-parade, Leeds.

Whittlesey, March 18.—For restoring and re-seating S. Andrew's Church. R. Reynolds Rowe, F.S.A., architect, 10, Emmanuel-street, Cambridge.

Southport, March 15.—For the erection of S. Andrew's Church. W. Robson and T. Fisher, Hon. Secs.

Strand District, March 15.—For the supply of Yorkshire and other paving, granite kerb channels, and dressed granite, &c.; also for relaying and repairing the carriageways and footways within the Strand district. Thos. M. Jenkins, Clerk to the Board, offices, 5, Tavistock-street, Covent-garden, W.C.

Strand District, March 15.—For the supply of materials and the execution of jobbing and measured works required for the sewers and drains. Thos. M. Jenkins, Clerk to the Board, office, 5, Tavistock-street, Covent-garden, W.C.

Midland and London and North-Western Railway Companies (Ashby and Nuneaton Joint Railways), March 15.—For the erection of passenger stations, goods sheds, houses, and platforms at the following places, viz., at Measham, Market Bosworth, Shackerstone, Stoke Golding, Snarston, Heather, Hugglescote, Shenton, Higham-on-the-Hill. Secretaries of Ashby and Nuneaton Joint Railway Committee, Euston Station, London, N.W.

Leeds, March 15.—For the construction of a storage reservoir, at Springfield Mill, Farsley, near Leeds. S. Firth, architect, Undercliffe.

Leeds, March 15.—For a dwelling-house, in Lady Pit-lane, Hunslet. Richard Towse, architect, Dewsbury-road, Leeds.

Leeds Waterworks, March 17.—For the construction of a covered service reservoir, at Moortown. C. A. Curwood, Town Clerk, Leeds.

Leeds, April 3.—Building new bridge. Quantities supplied. Bridge Office, 19, Corn Exchange, Leeds.

Gloucester, March 20.—For the erection of a new chapel, day-rooms, and other buildings. Mr. Medland, the county surveyor, Clarence-street, Gloucester.

Henley Union, March 14.—For the erection of new school at the Union Workhouse, Henley-on-Thames. Nicholas Mercer, clerk, Henley-on-Thames.

Herefordshire, March 25.—For the erection of a school at Bromesberrow, near Ledbury. Middleton & Goodman, architects, 1, Bedford-buildings, Cheltenham.

Isle of Ely, July 25.—For an iron bridge across the river Ouse, at Littleport. F. M. Metcalfe, Clerk of the Peace, Wisbech.

Churwell, March 13.—For the erection of a new school, in connection with Mount Zion Chapel. Samuel Horner's, Little-lane, Churwell.

Convict Prisons, March 11.—For the supply of timber, deals, slate, lime, sand, bricks, lead, glass, wrought and cast iron, ironmongery, gas and water pipes, whitelead, oils, colours, &c., for twelve months. Directors of Convict Prisons, 44, Parliament-street.

Debyshire, March 24.—For alterations and additions to the County Prison, Derby. Robert Griffiths, architect, Martin-street, Stafford.

Bicester, March 25.—For building a chapel at Fewcot, and a vicarage house at Stoke Lyne, both near Bicester. Rev. C. Marsham. Caversfield, Bicester, Oxon.

Bradford, March 15.—For works required in the erection of a terrace of fifteen houses, to be built near the Manningham Railway Station. Marsden & Bennett. architects, Popplewell's-chambers, Market-street, Bradford.

◆

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BANKRUPTS.

(TO SURRENDER IN LONDON).

Charles Castleman, Westbourne Park Villas, Bayswater, and Kingston, timber dealer and brick manufabturer, March 14, at 11—Frederick Chadwick, Sellwood-terrace, Fulham-road, builder, March 22, at 1—George Wood, Vorley Villas, Junction-road, Upper Holloway, late brick merchant, March 24, at 12.

(TO SURRENDER IN THE COUNTRY).

Abel Richard Chapman, Heigham, builder, March 16, at Norwich — Daniel Cunningham, Leicester, plasterer, March 14, at Leicester—Frederick Haythorpe, Ramsey, builder, March 18, at Peterborough—William Topham, Harrogate, builder, March 16, at York—Joseph Seal and Joseph Everard, Nuneaton, brickmakers and stone merchents, March 20, at Coventry.

BANKRUPTCY ANNULLED.

Charles Walter, Shardeloes-road, New Cross, builder, Feb. 24.

PUBLIC EXAMINATIONS.

April 19, B. E. Abery, London-lane, Hackney, builder —April 13, H. Stevens, Swaffham Bulbeck, Cambridgeshire, builder.—March 18, H. W. Webster, Kings-road, Bedford-row, builder—March 20, H. Parker, York-place and Marsh, near Huddersfield, joiner and builder—March 21, J. Potter, Kate's-hill, Dudley, engineer.

DIVIDEND MEETINGS.

March 20, W. Brooks, Burnley. plumber—March 21, J. Rhind, Cardiff, civil engineer—March 21, C. Evans and T. J. Jones, Newport, timber merchants—March 17. W. White, Poole, Dorset, builder—March 20, T. Morley, Brighton, builder.

DECLARATIONS OF DIVIDEND.

W. Bell, Gateshead and Tynemouth, paint manufacturer, div. 8s.

◆

PARTNERSHIPS DISSOLVED.

Butt & Perfect, Ladbrook road, Notting Hill, builders, —Morriss & Kett, Finchley, builders—Kerr & Padget, Bradford, ironfounders—Platt & Malpass, Madeley Heath and elsewhere, brick and tile manufacturers—Brown & Pullan, Bradford, painters and paper hangers—Simmons & Son, Manchester, builders.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast table with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—James Epps & Co., Homœopathic Chemists, London.

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THE BUILDING NEWS.

LONDON, FRIDAY, MARCH 17, 1871.

METROPOLITAN RAILWAY BUILDING COMPETITION.

THE premium of 50 guineas for the best design for laying out the South Kensington Estate, has been awarded to Mr. H. Elliott. In this locality there are many houses unlet, from having been built, as Mr. Elliott believes, upon an unpopular plan—upon the smallest possible piece of ground, and in too close proximity to stables—in fact, upon the usual too greedy scale generally adopted by speculating builders. He therefore recommends to the Company a more liberal scheme, and we should be glad if he be able to prove, as he anticipates, that it would be more popular. It is that which to a certain extent has been adopted around Notting-hill, of having a common large garden and square, and a special small garden to each house, avoiding the narrow strips of garden too much in vogue hitherto elsewhere, and the unsightly and unsavory mews, cheek by jowl with the houses. He forms a roadway 45ft. wide at the Cromwell-road end, running with an easy curve to join one that has been partly begun upon the adjoining Broodwood's estate. This would give a fine crescent of houses; mews for which, giving stables for about half the houses, are placed where they would be handy and unobjectionable. The houses are of the first-class, with staircase in centre, permitting more equal-sized rooms and larger hall than in houses with a straight flight opposite the door. These are estimated to cost a builder £2,600. Their frontage would be 22ft. 6in. each, and is calculated at from 33s. 6d. to 37s. 6d. per foot., amounting to £1,835; and with 23 stables to £1,950 6s., and deducting interest on cost of roads and gardens, to £1,855 6s., the capitalised value, at 31 years' purchase, being £57,514 6s. The rack rental value of the houses would be £300 less; ground-rent, £52 10s.; and as in this locality leaseholds are generally sold at 15 years' purchase, the leasehold value would be £3,712, giving a net profit of £900; and with probable improved ground-rent, about £1,180—the amount is said by Mr. Elliott be the profit made usually by builders building upon a good plan. The general arrangement in this case is certainly a good one, as also is that of the houses; the elevations are unfortunately mediocre and commonplace.

Messrs. Mileham and Kennedy have a pleasantly-arranged, but less economical plan for laying out this estate. Most of their houses are upon the ordinary plan with objectionable excrescences at the back; and a few others, shown with wider frontages and offices on the ground floor, behind them, have poor and ill-lighted staircases, and no halls.

Mr. W. H. Lockwood shows a similar arrangement to Mr. Elliott for the plan of his houses, well-worked out, but the style adopted is a starved and cranky description of Gothic, and the general plan and irregular triangles of closely-set double-detached villas, enclosing a too-confined common garden, is inferior. Mr. Klein sends two plans for this estate, one of which gives a good crescent turned in the opposite direction to Mr. Elliott's, looking in front upon an ample pleasure ground adjoining the railway cutting, but the backs look upon mews and confined courts.

Mr. Elliott has been also fortunate enough to carry off the premium of 50 guineas for the Linden Grove Estate.

This property has but one entrance, Linden Grove being a *cul-de-sac*. Mr. Elliott, jealous of the retired character of the site, gives it but one entrance, immediately opposite the railway station, leading up to a semi-circular road, with crescents of houses on either side, with common gardens to their rear. He advocates this form as giving more available frontage, affording larger open spaces, and more attractive and sunny than parallelograms or straight roads, besides being particularly adapted to the site in question. He has given his elevations a character—"being a mixture of Elizabethan and Queen Anne's styles," with red brick and stone dressings, and high roofs, which is certainly picturesque. The cost would be about £2,200 per house; the value per foot frontage is estimated at 33s. 6d., or about £40 per house. By this treatment the estate is made to yield a capitalised sum of £47,910.

Messrs. Matthews, Quilter, & Cutler have a plan more suited to the country, with sixteen double villas scattered round a serpentine road. In Linden-grove we fear such gardens would be rather unpractical. Mr. Charles Hayward, of Westbourne-park-villas, Mr. Klein, and others, adopt a parallelogram arrangement, not equal in merit to the above.

The premium of 50 guineas for the Campden Hill Estate has been carried off by Mr. C. J. Richardson. His plan has been made with the view of injuring as little as possible Campden House. Villas of about £200 to £250 annual rental, with gardens, are to be built round those premises.

The estate, it is supposed, would realise thus £950 per annum. We do not notice any particular merit in this plan. Mr. Klein also reserves Campden House, but rakes it with the windows of two rows of houses on either side of its grounds.

Mr. Elliott has been even more considerate for the existing building, putting fewer villas around it; but we fail to see how he can bring his annual value to a higher amount than Mr. Richardson—viz., £1,280. We notice, however, £200 difference in the rental set down for Campden House itself.

It is noticeable that none of the premiated designs are of the too-greedy order, and that apparently the judge, Mr. Hunt, has decided upon what he conceives would be a liberal and even æsthetic treatment.

The premium of 50 guineas for the design for laying out the Praed-street Estate has been adjudged to Mr. Thos. C. Sorby, with a plan giving accommodation for small dwellings for operatives, and shops.

On each side of the station, opposite the Great Western Hotel, he has placed two-room shops, treated as an arcade, "to form a pretty feature," and to be occupied by tobacconists, newsagents, &c., &c.

In a narrow space over the entrance to the tunnel he proposes "neat panels in the walls for permanent advertisements," which we hope he will be also able to render pretty features. Behind the station he places a block of model dwellings for 36 families, while a range of neat shops and stables behind occupy the vacant part of the frontage of Praed-street.

Mr. Klein has not confined himself to the Company's property, and has covered over much of the open cuttings of the line.

The premium of 50 guineas for the Edgware-road Estate has been awarded to Mr. F. A. Klein, whose plans generally have been left to speak for themselves, without any report. He sends two designs; one retaining the present engine-sheds, and surrounding them with factories and shops, and the other with a large market replacing the sheds, and surrounded on three sides by shops, and fronting Mitcham-street on the other. This plan would appear entirely to cover up the railway in a manner we can hardly think desirable.

Mr. Bassett Keeling has left a large open space at the back, next Mitcham-street, and surrounds it on three sides with a block of buildings, with separate dwellings on the several floors, reached by open staircases; between this block and others fronting Chapel-street and Upper Lisson-street, he leaves an internal gated street as a courtyard, forming a playground for children of residents. Mr. Keeling has been more fortunate as regards the Farringdon-road Estate, the premium of 50 guineas for which he has carried off. This site being close to the station and near the seat of the wholesale pottery trade, he has suggested opportunely the erection of a pottery exchange. A centre hall, about 250ft. long, by 40ft. wide, is surrounded by warehouses, shops, pattern rooms, &c. On the basement plan are packing rooms for the pottery goods, in communication with the railway, which passes beneath the central hall. The scheme seems ingenious and practical, and it would bring a revenue, to the railway traffic in the shape of goods.

Mr. F. M. Godden sent also a clever and suggestive design, proposing baths upon a large scale. In an accompanying perspective his design, not a bad one, is well shown. The skyline is somewhat crude, and the chimneys seem forgotten; perhaps the smoke would be utilised.

Mr. T. C. Sorby has obtained the premium of 50 guineas for the Clerkenwell estate, besides that of Praed-street. Finding shops in the neighbourhood unneeded, but no houses to let, Mr. Sorby proposes to utilize the vacant sites with small and model dwellings of a modest description, which do not call for comment.

The 50 guinea premium for the design for laying out the King's Cross Estate has been awarded to Mr. A. M. Ridge, for an economical arrangement of shops and warehouses, and the morals of the neighbourhoood may not therefore be injured or its tastes enlightened by the music-hall which Mr. Klein would have introduced among them. The lives of passengers will also probably not be endangered by the arches without abutments, and turning round curves, as Mr. Elliott has suggested in his elevations.

The premium of 70 guineas for the Barbican Estate has been awarded to Messrs. Wilson and Aldwinckle, who have sent two designs, one carrying a proposed new roadway over the course of the line, and leaving an airhole on one side. In their alternative plan, with a road from the Barbican crossing it at right angles, and bending with too sharp a turn towards Red Cross-street, two larger spaces are left open above the railway cutting, in the centre of blocks of houses. The class of buildings proposed, shops and warehouses, do not call for remark.

The premium of 100 guineas for the Smithfield Estate has been awarded to Mr. F. A. Klein, of Cannon-street. For this important work this gentleman has sent alternative designs. differing mainly in the direction of the principal proposed street through the site. In the one case it has been brought so as to open immediately in front of the Farringdon-street Station, and in the other on the one side of its façade, so as to continue in a line with Cow-Cross-street, which passes the station on the city side. The ground being valuable, the shops and warehouses are placed as closely as possible upon it. Mr. Klein not having favoured us with any report to accompany the plans, the Company, we presume, must make their own calculation as to the outlay and returns; and we, for lack of time, must leave those of our readers who may inspect the drawings to do the same. In our opinion, in comparison with his competitors, Mr. Klein has fairly earned this, the largest premium offered by the Company, by his well-thought-out and practical designs.

Upon the whole, as we have said, we think the authors of the premiated drawings have fairly deserved their success; but it is obviously impossible for us to have given the consideration we could have wished to the immense mass of drawings that have been sent in response to the interesting invitation of the Metropolitan Railway Company. The entire number of competition designs is, we believe, not less than 300, and the pains bestowed upon them, and the talent and thought they evince, is highly creditable. As our labours were not impeded by the number of other visitors—for the greater part of the time we had only the company of the civil policeman in charge—it would seem that the profession is not yet fully aware of the exhibition which is laid out for them and the public within a stone's throw of the Praed-street Station, in several unoccupied shops, Nos. 3, 5, 7, and 9, Craven-road. We strongly advise our readers to avail themselves of the opportunity for the inspection and study of these drawings thus afforded by the Metropolitan Railway Company.

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THE MALADY OF MODERN ART.

WE are not about to write a lamentation on the decline and fall of architecture. We believe a portion of it, on the contrary, to be in a more hopeful state than any it has known for a century or more; but that the great bulk of it is still weak and sickly, still battling with the remains of chronic disease, those artists whose own work is the healthiest will be the last to deny. We wish at this time to notice the average of modern art, not the favourable exceptions — the buildings which rise around us on every hand, and the attempts of art workmanship which present themselves in every shop and show-room. Looking thus at the mass of what has been done recently, and is being done at this moment, it would be easy to make out a long list of failings. Such lists have often been made out. Criticism has been lavished—and by no means uselessly—on the separate points in which our ordinary architecture fails; but far greater good might be done if attention could be directed to the causes of these failures: if, instead of attacking merely the isolated symptoms, we could attack the common source and origin of them all. It is unfortunately too true that there are more sources than one; and it is not by counteracting a single morbid tendency that all unsoundness can beremoved. Yet there is one tendency, so almost universal in the average work of the day, that it may be called pre-eminently the malady of modern art. It shows itself under the most opposite shapes; it is confined to no particular style; it is equally at home in Gothic, Classic, or vernacular. Unhappily, too, it has as yet no definite and easily recognizable name. Sometimes it is mildly described as "weakness of design," "crudeness," or "lack of unity;" but the essence of it in reality is in want of thoroughness and want of thought. The mind possessed by it never masters difficulties, but always tries to shuffle out of them. Such a mind loves plausibilities, and never goes to the bottom of anything. Its ambition is to keep knotty points out of sight, and make matters smooth on the surface. It never fairly grapples with its work, and subdues it from end to end. This is the one all-pervading vice of our would-be art; it sticks little bits of ornament over its work here and there and thinks that to be enough; it never so much as dreams of what is the very soul of real art—the conquest and mastery of each subject as a whole.

To take the most flagrant cases first: out of a hundred modern street buildings, how many are designed as buildings, and how many are treated as "fronts?" In how many of them does the "design" begin and end with the putting up of a single wall,—a mere screen before the real structure? The adjoining houses, one might have supposed, shut out enough of it; the architect would be glad to display all he could—to shew by the roofing, something of the general form, and to bring out the elevation against the sky by well studied chimneys or dormers. Nothing of the sort: it is much easier to hide blunders than to avoid them—to conceal an ill-designed roof than to invent a good one. A few feet of brickwork will cover it up and save the necessity for hours of thought. This is what passes for architecture in half our city shops and warehouses. If the effect is to be "plain and substantial," a few cement mouldings are run round the doors and windows: if it is to be grand and magnificent, the carver is called in to distribute over it so many yards run of his stock patterns. There is not even an attempt at making the building architectural: all that is desired is to conceal it by a plausible falsehood. But all our street buildings, it will be said, do not begin and end with a sham front. Numbers of them are visible all round, sides, and roof, and chimneys as well. Very true: but they shew in a different way the very same fault as the others. We are speaking throughout, it must be remembered, of average and ordinary works, not of exceptionally good ones: and we submit that in all types of them may be traced the same powerlessness to treat anyone of them as a whole. Grant that in the type now in question the walls and roof are visible; grant that the building is so far better than those in the previous group; that it, is in fact, no worse than a common barn or cowshed. This of course is higher praise than can be given to a large number of modern street buildings; but it is rather too low a qualification for the title of "architecture." And yet, as far as general design is concerned, most of the works in question have no other. As regard shape, outline, mass, light and shade, general effect, they might have been the work of a country mason, and by no means a clever one. They are probably mere brick boxes with roofs to them; or, if not, their parts seem to have come together anyhow; there is no order, no artistic arrangement—nothing of what painters call "composition," to be traced in them. Architecture, in the highest sense, is absent altogether. Some architectural details, it is true, are applied or missapplied, to make the thing pass for "a design;" but they are disconnected, jarring, inharmonius, unreal. It would have been better to have left matters as they were than to emphasize by contrast the absence of artistic power. "To hide with ornament the want of art" is a line which has been quoted till it has almost lost its force; but it exactly describes the process by which the inferior work of the day is made to pass muster with the public. They see wretched proportions, shapeless outlines, blunders, and vulgarities innumerable; and they are persuaded into thinking them all very fine by the addition of a little commonplace ornament. If we turn from building to its accessories, such for example as furniture, the case is just the same. The so-called "Gothic" designs are for the most part mere pieces of barbarism and awkwardness smothered in Gothic decoration to make them go down. But neither here nor elsewhere, in inferior work—which unhappily means at least nineteen-twentieths of the whole—can there be found any power to grasp and deal with general design and arrangement. There is no ability to bring things into order and shape, whether the things are large or small. If they are plain, they stand in uncompromising ugliness; if they are enriched, they show deformity set off by finery. The designer does not touch the things themselves; his decoration is a mere disguise; and this, above all others, is the malady of modern art.

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VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."*

II.

THE first volume of M. Le Duc's dictionary contains 506 pages, embracing 45 articles, commencing with the word *abaque* (abacus) and terminating with that of *aronde* (dovetail), but one of these definitions occupies upwards of 160 pages of closely printed matter, and is illustrated with 165 engravings. This definition, to which we shall have to refer again, is an able essay on the history of French architecture during the period embraced by the author's researches, and is divided into that of religious, monastic, civil, and military architecture. In culling from the wealth placed before us, we shall, as a rule, avoid those definitions which are, or ought to be, well known to our readers, reserving our space for the more recondite or the more suggestive articles, and shall select those which more markedly bring out the principles set forth in M. le Duc's preface, and on which we commented in our last number. Among the first of these we would draw attention to that given under the head of *Application*, a word used to express applied ornament as distinctive from that decoration which is incorporated with and which forms a portion of the construction of an edifice. This definition embraces such arts as painting or gilding surfaces, the application of ornamental plaster-work, mosaics, or other purely decorative objects. In Greek architecture, the application of a thin coat of plaster to the surface of a building was a common treatment; the remains of Pompeii, the ruined temples at Agrigentum, exhibit this treatment as the general one; in fact, where the material was not in itself beautiful, fine, and smooth, the Greeks sought the aid of "application" to obtain those qualities they valued so highly. In Roman times thin slabs of rare and highly coloured marbles and porphyries covered the walls, a mode borrowed from and still retained in the East. Mosaics played a great rôle in Byzantine and later times; but these step back too far into antiquity to be specially commented upon by our author; and from the Carlovingian epoch up to the twelfth century the clergy of France were not rich enough to avail themselves of such luxuries. As they grew more wealthy, altar retables, tombs, and the other smaller objects necessary or accessory to churches began to receive applied ornament, and the feeling once generated or revived, the art of "application" spread till it covered the whole of the edifice. Suger decorated the rood-loft of the abbatical church of S. Denis with ornaments in bronze and figures in ivory; enamelled and silver-gilt plaques covered the altars and tombs, and, as coloured marbles were rare in the north, coloured glass did duty for them. Blue glass, mounted on silver foil, filled in the spandrels of the arcade of the Sainte Chapelle at Paris, having on its surface delicately-pencilled ornaments in gold—a process of ornamentation quite worthy of judicious revival, in spite of the rather crude restoration of the edifice referred to. At present its use seems to be restricted to the vulgarities of shop-fronts and gin-shops. Sometimes delicately-painted ornaments on vellum, rivalling the illumination on the margins of elaborated manuscripts, were used as the decoration of smaller objects, and protected by sheets of clear white glass; an application which might be of great use in the decoration of panels of doors and cabinets. But one of the most useful "applications" referred to is one which we have not seen revived, but which would be of great service in the decoration of small surfaces. "At the end of the twelfth century the application of impressed plaster-work to the surface of statues and smaller portions of internal architecture was frequent. These applications were composed of a very fine coat of lime, on which, whilst it was moist, delicate ornaments in low relief were stamped by means of wooden or iron tools," and which were afterwards painted and gilded. Nor was this mode of ornamentation confined entirely to internal use; often it was used in those deeply-recessed and shadow-loving porches which form the glory of the cathedrals and larger churches of France; and portions of this species of decoration yet remain in those of Angers and Notre Dame at Paris. In the fifteenth century they endeavoured to substitute a resinous composition for the plaster coating, but without success; that has scaled off and disappeared, whilst the earlier process has endured. Traces of this species of decoration are not unfrequently found on the flat surfaces of walls, presenting the outlines of fleur-de-lis, sacred monograms, stars, and other simple ornaments, much in the same manner that the pargetting of our old half-timbered houses in many parts of England yet do; and it is worthy of seriously thinking about for the decoration of our large-walled and bold-looking churches and chapels—especially the latter. It has the merit of being cheap. Another species of application is also worthy of revival for cabinets and smaller articles of joinery, and is thus referred to by M. le Duc. "During the twelfth, thirteenth, and fourteenth centuries they also applied upon wood thin vellum, rendered flexible by being soaked in water, and fixed to the object to be covered by glue or cheese size. On this covering, which followed all the forms of the mouldings, they tooled other ornaments in faint relief; they combed it, gilt it, and attached to it pieces of glass painted on the under side." Many of the processes used in this species are described in the work of "Theophilus Presb. et Monac. Diversarum Artium Schedula," a work of which we should hail with pleasure a new translation, that of Hendric not only being difficult to procure, but also being very defective.

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* Dictionnaire raisonné de l'architecture Française du XI. au XVI. Siecle, par M. Viollet le Duc, architecte du Gouvernement, Inspecteur-général des Edifices Diocesains. 10 vols.; 8vo: Morel, Paris, 1854—1868.

Those who are familiar with the richly and quaintly-tooled impressed vellum bindings of the fifteenth and sixteenth centuries will be able to form an idea of the richness of effect thus obtained by simple means; and the study of the class of ornament then used for this purpose will amply repay the student. Medallions of sacred or historical subjects are frequent, and the judicious mixture of plain tooled lines with reticulated or flowing ornament is very suggestive. Boiled leather was frequently used for coarser works, and the application of these decorative processes might most advantageously be revived.

Our next extract is of a more scientific and architectural character, and from the able definition of the word *arc-boutant* (flying buttress) we shall borrow largely.

M. le Duc rightly esteems the adoption of the flying buttress as one of the chief structural inventions of the middle ages; it liberated its architects, it converted the art of building into a science, but it ultimately, as all surplus of science does, killed architecture as a fine art. When architects became pre-eminently engineers, architecture as a fine art perished. They wrought miracles and ceased to appeal to human feelings—they no longer expressed human ideas—they either rose to be almost gods in making something out of almost nothing, or they descended to the other pole and frightened us with scientific atrocities—buildings constructed with the wisdom of the serpent, no doubt, but which, certainly, if the devils beheld they would tremble. Man liked them not, and then the architects changed their tactics; flying buttresses were abandoned; and human nature, seeking for a visible expression of support, reverted to the primitive ideas of Classic architecture. Of course, M. le Duc looks only at the bright side of flying buttresses—he sees only the use of them; of the abuse, if he is conscious of it, he says but little. We feel we are dealing with a partisan, but his pleading, or rather his reasoning, is so exquisite it needs the utmost catholicity in art to avoid being pledged to the view his enthusiasm carries us into. "According to the taste of each school, men have greatly praised or greatly blamed the system of flying buttresses," he says, on page 60. "We do not undertake either to defend them or to show forth their faults; there is but one thing for us to say: according to our view of this system of construction, it is that this is the frankest and most energetic means adopted by the builders of Mediæval times. Up to this time they were groping in the dark; from the moment when this system was adopted, ecclesiastical architecture developed itself: it marched boldly on the new pathway. To ask for a Gothic church without flying buttresses is to ask for a ship without a keel; it is for the church as for the ship, a question of 'To be, or not to be?' The problem that the architects of the Norman epoch set themselves to solve was to crown with a vault the Latin basilica. So far as regards the disposition of its plan, the ancient basilica completely satisfied the requirements of the Latin church; it had wide open spaces, small supports, air and light. But the ancient basilica was covered with a timber roof—the absis alone was vaulted. Now, in our climate, these roofs were neither wind nor water-tight; they rapidly decayed when there were no metal spoutings—things which can only exist in the midst of a people skilled in metallurgy. Moreover, wooden roofs burnt, and a building covered only by a wooden roof, once burnt, was destroyed from top to bottom. Up to the tenth and eleventh centuries our histories unquestionably record that burnt churches necessitated new ones. The chief thought of the clergy in those days, and consequently of architects also who built new churches, was to vault the nave., But the walls of a basilica, supported on slender columns, did not present sufficient resistance. In the eleventh century the builders in the centre of France had given up clerestories; they resisted the thrust of the barrel vaulting of their high naves either by quadrant vaults, as in the Auvergnat churches, or by small intercepting arches springing from the aisles. Thus the naves could not be lighted by windows; the aisles were almost as high as the nave, and the broad external walls, strengthened by buttresses, resisted the combined thrust of both larger and smaller vaults. In the north of France this system could not prevail; the large centres of population demanded large churches; they had need of light; it was necessary to obtain this light by means of windows pierced in the nave walls, and consequently they had to overcome the resistance afforded by the vaulting of the aisles." "It required two centuries of groping, of attempts frequently futile, to arrive at the solution of this simple problem;" "but when once this way was opened, progress was rapid for the flying buttress, which was born in the eleventh century, reached its culminating point and declined in the fourteenth." "Amongst the most ancient of these flying buttresses is that of S. Remy, at Reims, the construction of which belongs to the latter half of the twelfth century (see Fig. 50, p. 62). Here this feature is simple; it abuts directly against the point of thrust of the vaulting, and extends its resistance in a vertical line by means of an external column detached from the wall above the triforium." By and by the builders of those days found out that this was not enough. They found out that the thrust of pointed arches of wide span was not restricted to a mathematical point; that the wall had a tendency to buckle, owing to the divergence in the line of thrust created by the sliding of the voussiors of the arch upon each other; and to counteract this they doubled the arch of the flying buttress, allowing the lower one to impinge below, and the upper one above the exact thrust point, uniting them by a solid mass of masonry. An early example of this expedient is illustrated by a sketch of the flying buttresses which support the vaulting of the apse of the cathedral of Soissons (illustration, Fig. 52, p. 63), the construction of which goes back to the early part of the twelfth century. The heads of these abutting arches rest against counterforts, supported by engaged columns." "It is necessary to observe that the last voussoir of each arch is not engaged in this masonry, but remains free to slide in case of settlement, illustrating the application of that principle of elasticity on which the stability of these vast buildings depends. The faculty of sliding thus given to flying buttresses prevents their crippling, for it is unnecessary to say that they would be useless unless their thrusting force remained intact, which would not be the case if the arch was crippled. For example (in the diagram 53, p. 64), let A B C be a flying buttress; if the vertical wall D settles at all, it must needs be that the arch would be broken as B, as in Fig. 1, if its head were engaged as A. If, on the other hand, a settlement occurs in the buttress E, the arch of the flying buttress would be broken at the same point, in the manner shown by Fig. 2. It is easy, therefore, to understand how necessary it is to leave the arch free at A, in order to allow of it preserving its curve intact and accommodating itself to these circumstances. These precautions in the jointing of flying buttresses were not always taken, and the proof that they were not useless is found in the fact that when they have been overlooked disastrous results have nearly always ensued." These arches, as we have before stated, were generally doubled, and in the early half of the thirteenth century attempts were made to unite the two—attempts resulting in much beauty, but which appear to have been abandonned. Probably homogeneity destroyed elasticity. We have a very fine and suggestive example of this treatment presented to us from the choir of the Cathedral of Amiens, where the weight of the unusally massive vaulting necessitated an unusual degree of resistance. The vaulting there is about 16in. thick; the materials are heavy, rough and compact; consequently the architecture is more massive and less delicate than is usual with that of the thirteenth century.

Vaults of nearly 50ft. span, constructed of such materials as these, exert an enormous thrust, and it is worth while to examine how the architects of those days resisted and balanced them. If you turn to our illustration, Chartres, you will there see a sketch of the flying buttress, with a detail of a portion of it, as the vault was heavy, so are they; massive wall-buttresses receive the arches, which are ingeniously coupled by a radiating arcade; each course is radially jointed, forming a separate arch of itself, and the whole offers an oblique resistance to an oblique thrust. Again, the upper portion of the buttress is connected to a channel for the water from the roofs, the upper column shewn on the sketch forming a down-spout to the main roof, and it is thus conveyed to the gutters of the aisles, relieving the nave walls from the splashing occasioned by discharging the water from the usual gurgoyles on to the roof of the aisles, thus tending materially to the conservation of the building. This coupling together of the arches is, as we have already said, somewhat rare; but the union of the arch, with its upper raking line of water channel, is of common occurrence. Examples of this mode of treatment are given in Fig. 62, p. 72, from the same cathedral; but of some 30 years' later date, when the single arch is connected with the nave-way by a pierced and traceried arcade. It will also here be remarked how the early system of spreading the lateral thrust, virtually increasing the thickness of the main wall by means of an isolated column on the triforium wall, is retained, and how much economy of material and relief from the undue pressure of weights imposed upon the main supporting columns is thus afforded. From this time, the system here inaugurated prevailed, and a good typical specimen of the mode in vogue up to the later period of this species of construction will be found in Fig. 69, p. 79, taken from the church of Saint Wulfrund, at Abbeville. Science here out-did itself; art had declined, and the too-elaborate balance of resisting forces destroyed the means adopted. The endeavour to gain still further lateral resistance overshot its mark. The hindrance of the sliding motion at the point A led to grave disruption of the arches, for once broken at this point the function of the arch was transferred to the straight line of the water channel. When flying buttresses were constructed on this principle the thrust of the main vaulting was brought to bear on the line C D, and thence transferred vertically to the arch A, augmenting the duty imposed on it of carrying the dead weight of the water channel. This causes a counter thrust from the arch A B, which, meeting with no resistance at D, the thrust of the main vaulting arch having already been conveyed away, the wall becomes crippled in this point, and the flying buttress becomes no longer a means of support, but an implement of destruction. Often and often do we see in England wonderfully misconstructed flying buttresses, merely made to win a competition and look pretty; and we would urge on all who can do so, to carefully study the elaborate treatise we have thus skimmed. To those who cannot read this we advise them to abstain from the use of this double-edged sword until they can. Flying buttresses are of two sorts, useful and useless; but the useless are not simply so, they are an element of destruction—an enemy who never sleeps. M. le Duc enters learnedly and reasonably into the appropriate line of curve their arches should take, and gives to this important subject the full consideration it demands; but our space prevents our giving a fuller demonstration of his analytical reasoning.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE twenty-second lecture of his course on the above subject was delivered by Dr. G. G. Zerffi, in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. The lecturer commenced by observing that though the Indians, the Persians, the Egyptian priests, the Greeks, the Etruscans, and the Romans had all been members of the Ayrian group of mankind, nothing could have been more different than their religious, social, and artistic conditions. Many analogies could, however, he continued, be traced, and the farther we went back into history the more striking did these analogies become, all tending to prove a common origin. It would suffice for our purpose never to lose sight of the fact that the ornamental forms common to all these nations had not always been mere copies, but were preserved echoes of past ages, and had varied with the geographical position of the people, and their social condition. Referring to the illustrations of Roman art before him, he said that we found in them nothing but Greek motives. The Greeks remained the distinct representatives of individual freedom, on the basis of a democratic state-form; the East represented despotism in religious and social matters, and Rome would show us these two principles in everlasting conflict. The very geographical position of the city had necessitated the use of force to sustain its influence, and the element of force had become the exclusive basis of the Roman world. From the commencement of her self-created independence, Rome had adopted not the dynamic force of creating, but that of acquiring what others possessed. The arrangement of her temples, houses, bridges, and aqueducts had been Etruscan, her ornamentation Greek, and her architecture Egypto-Asiatic. The same influences had given her her mythology and heroic myths. Whilst the Etruscans had been concentrating their artistic powers on small articles, and the Greeks had ceased to do more than preserve their artistic traditions for the benefit of their new task-masters the Romans, those Romans themselves had excelled in grand and powerful undertakings, always having before them the purpose of glorifying the expanding and conquering force. They had erected gorgeous temples, not proclaiming the glory of the divinities to whom they were consecrated, but testifying to the powers of the constructors. Their edifices had been pompous, not constructed in accordance with the laws of beauty, proportion, and correct ornamentation, but profusely decorated to exhibit the wealth of the owners. Even this love of grand appearances, which seemed so entirely Roman, had been inherited from the immortal Greeks. The Macedonians, once masters of Asia, had commenced not only to found but to construct cities on a most gigantic scale. Pergamos, Sardes, and Harlikarnassos had been built under the Greeks. At Alexandria, under the supervision of Dinokrates, the court architect of Alexander the Great, Egyptian dimensions had served as a basis for gigantic constructions. Serapeons (temples with ample outer buildings, symbolical of the power of Greece over Egypt), museums, gymnasia, baths, &c., had been built on Egyptian plans. This Græco-Asiatic tendency had been transmitted to the Romans, a young and ambitious people possessing the power of carrying out Alexander the Great's Titanic idea of subjugating, and at the same time civilising, the whole world. The Romans might be said to have remained faithful to Indo-Germanic traditions, and had succeeded in creating, if not an original, at least an imposing architecture. The three principal political phases of their national life were clearly to be traced in the varying decorative styles of their works of art. During the first period both architecture and sculpture had been wholly neglected, the powers of the nation having been directed towards the establishment of an independent state existence, and consequently few Romans had devoted themselves to art. According to Plutarch the representation of divinities in human forms had been prohibited by Numa Pompilius (714 B.C.), and sculpture had not flourished until 160 years after his reign. From Varro we learnt that though certain statues produced by Etruscan artists existed, yet there were neither statues nor images of the gods in the temples. Under Tarquinius Priscus a statue of Jupiter, made of terra-cotta, had been erected, and a quadriga of the same material had been placed on the top of the temple. An article of a treaty, concluded by Porsena, after the expulsion of the Tarquins and the establishment of the republic, stipulated that iron should henceforth be used for ploughshares only, thus proving that this metal had been known. Art had laboured under great restrictions; at first the highest honour granted to a distinguished citizen was a pillar with an inscription; later, a statue in bronze not more than 3ft. in height, was granted for exceptional merit. A statue of Horatius Cocles, one of Clœlia on horseback, erected in the temple of Vulcanus, and many others, were said to have been in existence in the times of Seneca, but public acts had still been inscribed on simple bronze columns. The first temples and statues must have been of small dimensions, as the temple of Fortuna had been constructed in one year. Notwithstanding the never-ceasing wars, the fine arts had not been neglected by the Romans, but they had merely been employed to present some visible signs of the heroic deeds of the Consuls and their soldiers to the masses. By this means they inspired the people with pride, self-glorification, and a sense of exclusive patriotism instead of a love of beauty. After the destruction of Corinth and Carthage, and the close of the third Punic war (145 B.C.) security having become established, and great wealth acquired, a greater love of art followed. The buildings in the earlier days of the Republic had all been highly practical. The strong walls had been constructed of large squares of stone, and bridges, aqueducts, and cloacas had been the principle public works. We had, said the lecturer, traced the arch in India, and seen vestiges of it in Persia and Greece; we should now find that with the Romans it had become the expression of an interrupted, or rather perforated wall. The arch, as perforation of a wall, had nothing to do with the idea of supporting the roof, but was an ornament of the wall. Together with the arch, the column with its epistyle (or architrave) had been used to supply a support to the roof. Arcades might be assumed to be as old as the arch; and when we saw these principles revived in Italy, we should not have to deal with an innovation for mere decorative purposes, but should find that the combination referred to was rational and the outgrowth of the very nature of the fundamental principle the mixture of arch and columns. These happy combinations of pillar and epistyle, of arch and column, had enabled the Romans to construct their immense buildings, and in doing this they had given us a correct view of their national character. They had looked upon society as the outgrowth of abstract principles. The individual had been lost in the generality, and was valued in proportion to the property he possessed. To increase his property had been the aim of every Roman. Joyous freedom of intellect was unknown, and the cultivation of the imagination was considered as superfluous. With the Romans even religion, the mother of the arts, had been looked upon as a means for holding the masses in subjection and obedience. To blind the people, and force them to submission, pompous games had been instituted, triumphal processions held, and colossal temples and other edifices constructed. Every column, every pillar, each stone and carving, each console and cornice, every niche and every statue proclaimed Roman ambition, vanity, and national pride. Passing now to the different periods of Roman art, the lecturer said that the first extended from the conquest of Corinth to the accession of Augustus; the second during the rule of the Julians and Flavians (96 A.D.); the third from Nerva to the thirty tyrants (96-260 A.D.); and the fourth from the thirty tyrants to the foundation of the Byzantine empire. During the first period we should find Rome had been the abode of Greek artists. Art had been taught and treated theoretically and practically. The wealthy and powerful had affected a kind of enthusiasm for art, and delighted in luxury. The walls had been white, with painted ornamentations in red: this led to the use of genuine red-coloured bricks, mixed with others, and had originated polylithic wall-decoration. Marble had also been used, and the houses became more and more decorated. A party opposed to this tendency had arisen, and the conflict between the *intelligentes* and ιδιωταις commenced. During the second period the emperors had endeavoured to amuse the masses. Art had soared high above the rules of simplicity and truth, but was still full of admirable motives. Composite columns of gorgeous patterns; consoles of powerful mouldings; archivolts and architraves profusely decorated; the acanthus and olive-leaf; scrolls of high finish, and gigantic dimensions in general had distinguished this time. During the third period the provinces had begun to show signs of vitality, and under Hadrian Greece had once more produced great works. The power of the state, however, had been broken. No people could tolerate tyrants like a Commodus without being punished. Religion had stepped in—not the pure religion of love which would at another period present itself for consideration, but the superstitious religion of the East. The worship of Isis and of Mithras—a mixture of Egyptian, Assyrian, and Persian mystic doctrines had been introduced; the Chaldæan Genethlialogy, or art of divining the future from the stars at the birth of a person; magic amulets; and the Theurgic philosophy had given the death-blow to Greek and Roman art. The artistic object had received its value from superstition and not from its intrinsic beauty. Beauty, on the contrary, had been considered detrimental to the use of symbolic signs. It was said that the gods would no longer shower down their gifts if beautiful decoration was employed, because the advocates of mysticism found it less troublesome and less difficult to deceive with mere amulets. Thus had been ushered in the fourth period. During this we should see the ancient world vanish. Art had invariably left humanity when spirit and matter had been looked upon as antagonistic elements in creation, the one being good and the other evil. Formality became ascendant, and faith a means for mystic doctrines. Metaphysical symbolism had ruled supreme, and extinguished every spark of real artistic sentiment, thus burying the intellectual faculties under an oppressive tumulus of superstition, and checking real moral development.

The four periods, with their details in architecture and sculpture, will form the subject of the next two lectures.

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CHURCH OF S. LUBENTIUS A DIETKIRCHEN.

THE Church of S. Lubentius is situated on the Lahn, an affluent of the Rhine, in the Prussian province of Nassau, between Ems and Wetzler. Built in the eleventh century, the church has well preserved its original form. The exterior is very picturesque, the building being erected on the summit of a high rock. The material is a very hard stone, much used in buildings of this province and age.

PAUL TORNOW.

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The Battersea Vestry has authorised the payment of £652 to Mr. Edward Ryde, the eminent surveyor, for professional services rendered in valuing the railway, gas, and water companies' and other hereditaments within the parish, for the purposes of valuation, prepared under the provisions of the Valuation of Property (Metropolis) Act, 32 & 33 Vic., c. 67.

HIGH ART AND DR. DRESSER.

"Du sublime au ridicule" there is often only one step—and that a very small one. According to a paper read before the Society of Arts on February 8th last, by Dr. Dresser, on "Ornamentation considered as High Art," the discussion which followed, and the letters which followed both paper and discussion, we really must say that Dr. Dresser has perfectly succeeded in bringing prominently—nay, artistically—the fact before our eyes that any man may be "sublimely ridiculous." Ornamentation, according to our new paradoxical prophet, is high art; but sculpture, painting (or, as he calls it, "pictorial fine art") is a mere falsehood—a lie, with which the "Most High" has nothing to do. The proposition put forward by Dr. Dresser is not new. He is an ornamentist, makes money as such, and naturally thinks that everybody ought to become a believing follower of his faith in ornamentation as a high art. We have no objection to this kind of one-sided enthusiasm. Let the shoe-black be proud and conscious that without well-cleaned boots there is no salvation of the soul; for "cleanliness is next to godliness." Let the baker be proud of the loaf he so artistically turns out, and be convinced that without bread no sciences and arts; for "bread is the staff of life." Let every individual, of whatever branch of art he is, think himself the very centre-point of gravitation of our globe, which, if disturbed by a hair's breadth, would bring destruction on the whole universe; but let him beware of ventilating his little individual pride in the tatters of an apparently scientific garb before some artistic society. The pride then becomes obnoxious. The ventilation may rouse a terrible storm. It is an old Latin saying, "*figulus figulum odit*"—in free translation, "pots and pans often quarrel with one another." Dr. Dresser has done immense good with his paper. He has not convinced anybody that a painter is nothing but a liar, but he has given us an opportunity of judging how much may be talked on a special branch of decorative art, and what letters full of abuse may be written by one "figulus" against the other without in the least promoting a correct view on art. On the contrary, he gives up art again as a bone of contention to the practical and theoretical opponents. Between these two strong-headed parties art is dragged to the right or to the left, torn to pieces, either over-fed with practical work, or starved to death with mere theories. In both instances the lot of our art is not to be envied. Dr. Dresser appears to personate the "theoretical talker," as a correspondent has it, who, on the other side, represents the "practical artist," Now, it so happens that the paper read, the discussion which followed, and the letters which it provoked, prove an incredible amount of confusion of ideas and want of correct knowledge on both sides. Those who accuse Dr. Dresser of being a theorist prove that they do not know what the word "theory" means; and those who pretend to be all for mere "work and labour done" are not aware that they are hypothetical theorists. For the very assertion, that an artist has not to know, but only to work, is a mere hypothesis, the efficacy of which has to be proved by those very men who hold all theoretical knowledge on art in abhorrence. Dr. Dresser, in his paper, expresses opinions — hypothetical opinions—and beyond the assertion of these hypotheses in a very strong dogmatic form, he does not go. His definitions of art are not quite clear. When he asks himself, "What is art"? he begins his definition with a very suspicious subjunctive, and stammers, "It *may* be said to be the disposition or modification of things [what *things* ?] by human skill [what skill ?] or taste [what taste ?] in a manner which secures [how so ?] the awakening of pleasurable or desirable emotions [then anybody scratching his head is an artist] of the passions, intellect, or soul [is there intellect without a soul, or is intellect not soul, and what is soul ?] of those to whom the art addresses itself." Apelles said to the shoemaker, talking of anything else but boots, "*ne sutor ultra crepidam*;" in free translation, "do not be a philosopher unless you know the meaning of words." What does this sentence mean? "High art *may* [again the hypothetical subjunctive] be said to be an instructive hieroglyph of beauty." What is a hieroglyph of beauty? Perhaps a white negro? Does it stand so low with our knowledge of art that when members of the Society of Arts come together in the nineteenth century, an ornamentist is allowed to proffer such a jingle of words. But he does not stop there; he goes on and says,—"It [high art] is symbolized imagination or emotion, such as is calculated to teach some moral lesson or impress some important truth." What is a symbolized emotion? If we have a misfortune and we record it in our diary by two strokes crossing one another—then we have produced a work of art—for we have symbolized an emotion. If we ornament a vegetable dish with a wreath of ivy, we teach a moral lesson and an important truth; vegetables pass away, but ivy is evergreen, and the glories of heaven are everlasting! Shall we never learn to leave our canting propensities behind us when we enter the temple of the Muses? What does Dr. Dresser mean when he states that in ornamenting carpets, lamps, bowls, wall-papers, he teaches us moral lessons? What moral lessons? The moral lesson to go and learn from Dr. Dresser how to ornament—for he gives us some important truths into the bargain; he is not only ornamentist but missionary too. His frets, his meanders, his arabesques, his guilloches, are so many homilies, so many collects. Yes, collects of pounds shillings, and pence. Why does Dr. Dresser use big words like a quack doctor, praising his trade as the only moral, artistic occupation of the world? The ornamentist is an artist; who denies that? but there is no need for a teacher of ornamental and decorative art to talk unintelligible phrases, and to abuse all other branches of real high art. We do not care for mere opinions on what is high or low art, whatever that means. We know that our art does not bear comparison with that of other countries in Europe, because we make art subservient to other purposes. Art, as *art*, has nearly vanished from us. Art has been with us either the handmaid of a religious sect or a political party, or some crotchety practitioner, to whose paradoxes a quantity of unthinking, weak-minded disciples swear. In politics we have our "leaders:" they save us the trouble of thinking; in religion we have our sects; they help us to look respectable; and in art we have our paradoxes—because they pay; they go down with the ignorant. When a man uses in an artistic society the expression "that he detests an imitative work as an attempt at a lie," he forgets the origin of his own decorative art, which is nothing but an imitative work. Does Dr. Dresser mean to say that decorative art is not founded with all its patterns on nature? Does he not know that before ever a savage began to ornament, every possible pattern of ornamentation was made by Nature on shells, leaves, flowers, wings of butterflies, &c., and that his finite brain never will come up to the variety and beauty of the Infinite Artist, who, through His immutable law of affinity, has created finer geometrical figures in snow-flakes than any decorator of flats or rounds will ever be capable of inventing; and that his geometrical inventions and combinations of pretty little religious tracts in lines are nothing but poor, very poor, imitations of crystallization in matter? That when he calls the pictorial artist a liar he is condemning himself. The difference is only that the sculptor and painter imitate the very highest products of the Creator, whilst the ornamentist imitates the very lowest forms—the winding creepers, the wriggling worms, the meaningless twistings of straight and crooked lines. If we admit that geometrical forms taken from bodies only may be used artistically, why should we deny that the organic products of Nature may be used to ennoble our nature, "to set forth some moral lesson in harmonious shapes and colours?" Are not the pictures of a Hogarth full of moral lessons, more impressive than any Mahomedan or Dresserian arabesques? Schorn defines arabesques "as a kind of painting using natural forms in phantastic dispositions and combinations to express symbolically some allegory." We have here an authority, and his definition of decorative ornamentation in arabesques put into plain words would come to this: the ornamentist says one thing and means another, that is symbolism; and then again, he means one thing and says another, that is allegory. Now in essence both these things are much worse than imitation—they are deceptions in the very highest degree. We know from history that allegories and symbols have retarded real science and art more than anything else. Symbolism is the wide cloak under which deception, falsehood, prejudice, hypocrisy, and stupidity may hide. Allegories are apt to be taken for truths, and another kind of deception is practised. But there is no harm in art deceiving us. If Dr. Dresser's hypothesis would hold good, then, the "Arabian Nights," with their allegorical undercurrent of meaning would stand much higher in poetic value than the works of Æschylus or Shakespeare, for these latter painted men with their passions and shortcomings; both imitated characters as having spoken or acted so and so; in fact, both have been "liars!" We wish we had plenty such liars; we could well do without the ornamentists giving us moral lessons on a piece of carpet "setting our minds towards Mecca or Jerusalem, or some other sacred city of our spiritual Lord and King!" The paper of Dr. Dresser is a curious sign of our times. Where is our place in art-knowledge that such a paper could be read and discussed; and how has it been discussed? One single member, Mr. Burchett, spoke with dignity and thorough knowledge of the different theories of art. An honest champion, he broke a lance in honour of the genius of Phidias, Canova, Michel Angelo, Titian, and threw his antagonist with the spear of his cutting logic clean on the sand of the arena. Mr. G. A. Sala spoke like a newspaper writer accustomed to write on a horse-show one day, on a concert at the Crystal Palace with 3,000 performers the next, and on a secret treaty between Russia and Germany on the third; he was very eloquent, but said nothing. Mr. Edward Hall kindly condescended to plead for Moorish and Arab patterns on walls and carpets, but did not altogether object to a frieze being decorated like that of the Parthenon. We are grateful for this opinion, only we should like to be furnished with artists who could make a frieze like that of the Parthenon. Mr. Hyde Clarke, with a keen eye to business, advises us, "particularly at a time like the present, when we are contending for the trade of the world, and when, from certain circumstances, there seemed a probability of England acquiring a greater share of foreign commerce than she had ever enjoyed before, to communicate some mental expression to the common products of the country." Where is this mental expression to come from? Not from abuses of real art and from a questionable praising of ornamental art as a product of symbolic teaching of moral lesson taken from the inner consciousness of the artist; not by setting up a new creed with the device:—"God is God, and Dresser his ornamentist;" but only by an honest and diligent study of the production of all the branches of art, with an honest and humble piety, and with a deep veneration for the intellectual power with which the Creator has endowed us to reproduce his creations in wood, ivory, clay, bronze, marble, rounds, or on flats. The historical painter who immortalises scenes of the life of Christ, or of Greek, English, German, or French history, is not a liar. He uses, instead of geometrical lines or bunches of flowers, human forms, and speaks through these forms to our minds. Instead of propounding false and childish hypotheses, it will be well for our artists to study the slow and gradual progress of art in past ages. This study will furnish them with ideas, and enable them correctly to appreciate their own talents or their shortcomings. As to the letters called forth by Dr. Dresser's paper, we will deal only with two. A Mr. Wallace writes from the Linoleum Works, Staines, and argues against "Mr. Teacher" as an "unpractised theorist," because the public prefer wares that are more ornamented to their taste." This is altogether a libel on the English public. Firms like Jackson & Graham, and others, employ excellent designers, order new patterns, and sell them. It is the sluggish lower class of traders, who have learnt nothing, and do not want to know anything, that force their old cheap patterns on the market, and accuse the public of bad taste. Teachers of the stamp of Dr. Dresser pander to this tendency. They preach: "Have nothing to do with real art. Look at me, I am *the* high art; I do not sell my canvass painted over with groups of men who are no men, but mere lies, at so much gold per inch: I draw you a few flowers interwoven with delicious ideas on the immortality of the soul, the knowledge of good and evil, of mutual love and forbearance, &c. I follow out to the letter the old Jewish command—I make no graven images. I keep to the 'flat' in thoughts, words, and deeds." It is this kind of Puritan abhorrence of the flesh and blood and spirit in art, which deadens it, and which must be counteracted in schools and out of schools. We will now mention Mr. Moody's letter, divided into ten sacred commands. This writer hurls stones and bricks of abuse at Dr. Dresser's head. What a rage, what an unartistic way of controversy. Now Mr. Moody is against all talkers on art; he is all for work and labour done. But this is against the grand politico-economical principle which has made England one of the richest countries of the world. We mean the principle of "division of labour." The practical artist who has no time for the study of past works, of abstract theories of art-criticism, the culture of his mind, the enlargement of his views, the feeding of his imagination, who has always to draw on his own inner man, must have somebody else to read and study for him, to make him acquainted with certain laws and principles of symmetry and proportion, to guide his thoughts, to furnish him with intellectual food. This contempt and neglect of the higher intellectual part of art education has laid our modern art in England so low. Look at the writings of Flaxman, Sir Joshna Reynolds, Sir Charles Eastlake,—all men who cultivated their minds as well as their technical skill; they studied theories and works of past ages; they were real artists, and produced real works of art. The art-critic, the teacher of the æsthetical and historical branches of art, is one thing, the practical teacher of designs another. The one ministers to the mind and the imagination, the other developes the technical perfection in the student. Had Dr. Dresser enjoyed a systematic art education he never could have propounded his opinion. Had Mr. Moody had the same advantage he would not have said that theory is all nonsense; for the *one* Winckelmann has done more for the revival a real art in Germany than all her practical artists taken together;—and Germany is not badly off for artists. Let every one do on his own field the best he can, and let us, above all avoid the undue exaltation of one branch of art over others; for all trades and all arts, and all sciences honestly pursued, serve to promote our general improvement. In the replies to his antagonists, Dr. Dresser proves clearly that he suffers from a sad haziness of ideas with reference to his own hypotheses. He comes out very strongly as the mystic advocate of works of art "which embody the greatest amount of mind, or thought, or intellect, and are the best or most noble." Now the real painter works so entirely with his intellectual power that in order to express this graphically, Lessing makes his Conti, (the painter) say,—"Raphael would have been a great painter, even had he been born without hands." For it is not the colour of the paintbrush, but the intellectual power that flows through the paintbrush in pigments on the canvass which makes the painter. But Dr. Dresser stops his opponents short, and tells them "You have not the *grace* to understand my symbolic language as little as I, not knowing Hebrew, can understand the beauty of a Hebrew poem." First, art is not written in Hebrew; and, secondly, an art that is unintelligible is no art. Take a kaleidoscope, and shake it, and forms without end present themselves to your eyes; and according to Dr. Dresser's hypothesis you hold the greatest artist in your hands, created by Dr. Brewster, to teach us moral lessons. In passing in review of theoretical teachers who did no good at the South Kensington School of Arts, he mentions Dr. Semper as a French refugee. If Dr. Dresser's knowledge on art is as correct as this assertion, the sooner he begins his course of studies anew the better. Dr. Semper is one of the greatest living German practical ornamentists and architects, who, born at Hamburg, educated at Munich, visited France, Italy, Greece, and built the Theatre of Dresden, which was burnt down a few years ago, and is entrusted with the re-building of it. Dr. Semper has written many a valuable and really philosophical book on art, the study of any of which would have enabled Dr. Dresser to talk sense on art with that moderation and general grasp of details which distinguish the theorist from the parodoxical talker. What would Dr. Dresser say to a man asserting that only *bass* notes were music, that all melodies were lies, that *bass* notes alone formed the *basis* of music, and taught us to recognise the infinite in the finite, and made us see the square of goodness in the circle of our inner consciousness? X.

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ALBERT DURER.

OUR illustration this week from the works of Albert Dürer, is one of the woodcuts of the life of the Blessed Virgin. It represents Our Lord taking leave of his mother before his crucifixion. The mother, in her anguish, supported by her faithful friends, two of the other Marys probably, has sunk to the ground while she listens to the last words of her Divine Son, who stands in sad dignity in front of the picture, blessing her before parting. As usual, the background is filled with a beautiful landscape, with a fortified town on the left, the drawing and details of which are admirable.

The *Northampton Mercury*, in some complimentary observations it offered on the appearance of the A. Dürer engraving, which appeared a few weeks since, stated that our photo-litho exhibited a certain rottenness which did not characterise the original. This was a mistake. The original was reproduced in the same size to a nicety, even to the smallest dot. Our illustration was *exactly* as it was executed and given to the world by the great master. The orginal, after four hundred years of exposure and wear, was soiled and spotty, whilst the copy, which contained every particle of the artist's work, was as clean and bright as the original when first printed.

From some letters we have received, it is evident that some of our readers do not appreciate the value of those reproductions. It is well, however, that they should know that most of Albert Dürer's engravings are literally worth their weight in gold. We are giving about their weight in silver, even for the *loan* of some of them, and we could not get them at that price if we did not guarantee this, that they should be returned harmless. No preceding age has possessed the ability to produce *fac simile* representations of works of art, and no professional journal but the **Building News** is enabled to do so now. Still, if we thought that a fair proportion of our readers would prefer illustrations of buildings to occasional reproductions of A. Dürer's works, we would comply with their request.

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VICTORIA-TERRACE, ABERYSTWITH.

THE terrace some of the end houses of which are shown in our accompanying illustration, has been designed for the Corporation of Aberystwith by Mr. Seddon, architect. The site is at the extreme north end of the Parade, facing the sea, beyond and adjoining the Queen's Hotel, which was built a few years ago from the design of Mr. C. F. Hayward, architect.

The terrace will consist of about twenty-five houses, and reach from the aforesaid hotel nearly to the promontory which, projecting into the sea, terminates the Aberystwith bay to the north. Of these, three houses have been erected by Mr Thomas William, builder and lessee, and will be completed for occupation during the present season. That which forms the angle-house—seen in our view—consists of six stories in height, and those next it of five stories. With the object of providing suitable accommodation for families resorting to this favourite seaside place during the season, the plans have been arranged so that each floor may be complete in itself, with sitting, bed, and dressing-rooms, and every convenience.

The principal feature in the terrace is one that cannot well be adequately represented by an engraving—namely, the colour, which has been considered with the view of affording contrast and variety with reference to the existing buildings of the sea-front of the town. The frontage of Aberystwith towards the sea is very limited, and the greater part occupied by a monotonous row of mediocre houses covered with drab-washed cement, with Mr. Hayward's stately pile of the Queen's Hotel at the north end, executed in the purplish local stone, relieved by freestone dressings; beyond rises a noble range of green turf-covered mountains, scarred by stone quarries of the above-named hue. Mr. Seddon has, therefore, chosen as the material to build his houses up as high as the second story below the roofs in each case a bright rich red brick, from Cardiff, with freestone and light brick dressings to the openings, and black Staffordshire bricks used as a relief in the shape of bands and occasional diapers upon this red ground. But the uppermost stories and chimney stacks are in buff brickwork, with red ornamentation. The window openings are divided by columns of blue and green sandstones, about 9in. in diameter, with molded bases and zones and capitals carved in a simple manner. The roof of the angle-house is carried up as a steep pavilion, with a lofty stack of chimneys rising from its centre. Large dormers, bay windows, and corbelled porches give diversity of treatment to the smaller houses.

A fine esplanade has recently been formed by the Corporation, at an expense of about £2,000, in front of the whole of the site of this terrace, with several circular bastions projecting towards the sea.

As an approximate estimate of the cost of the houses, £2,000 may be named for the end ones, and £1,600 for the others, but there are exceptional advantages belonging to the site, as a quarry is situated immediately behind it.

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The Alexandra (Newport) Dock.—Ninety thousand cubic yards of this work have been completed, and the material used in raising the adjoining ground to the required level of the quays, leaving to complete the dock and entrance to the river, about 360,000 cubic yards, the greater portion of which is required for backing up the walls to their full height. The dock walls for their total length of 3,375ft. are built up to an average height of 15ft. above the level of the bottom of the dock, being nearly one half of the whole masonry, and throughout they have been founded on a bed of hard concreted gravel. The whole of the foundations of the lock, including the floors, cells, inverted arches, and recess walls, which embrace all the massive portions of the masony, are nearly completed to the level of the springing of the inverts, and the whole rests throughout on an excellent foundation. There remain to complete this work only the side wing and recess walls to the coping level.

Supplement to the Building News Mar. 17th 1871.

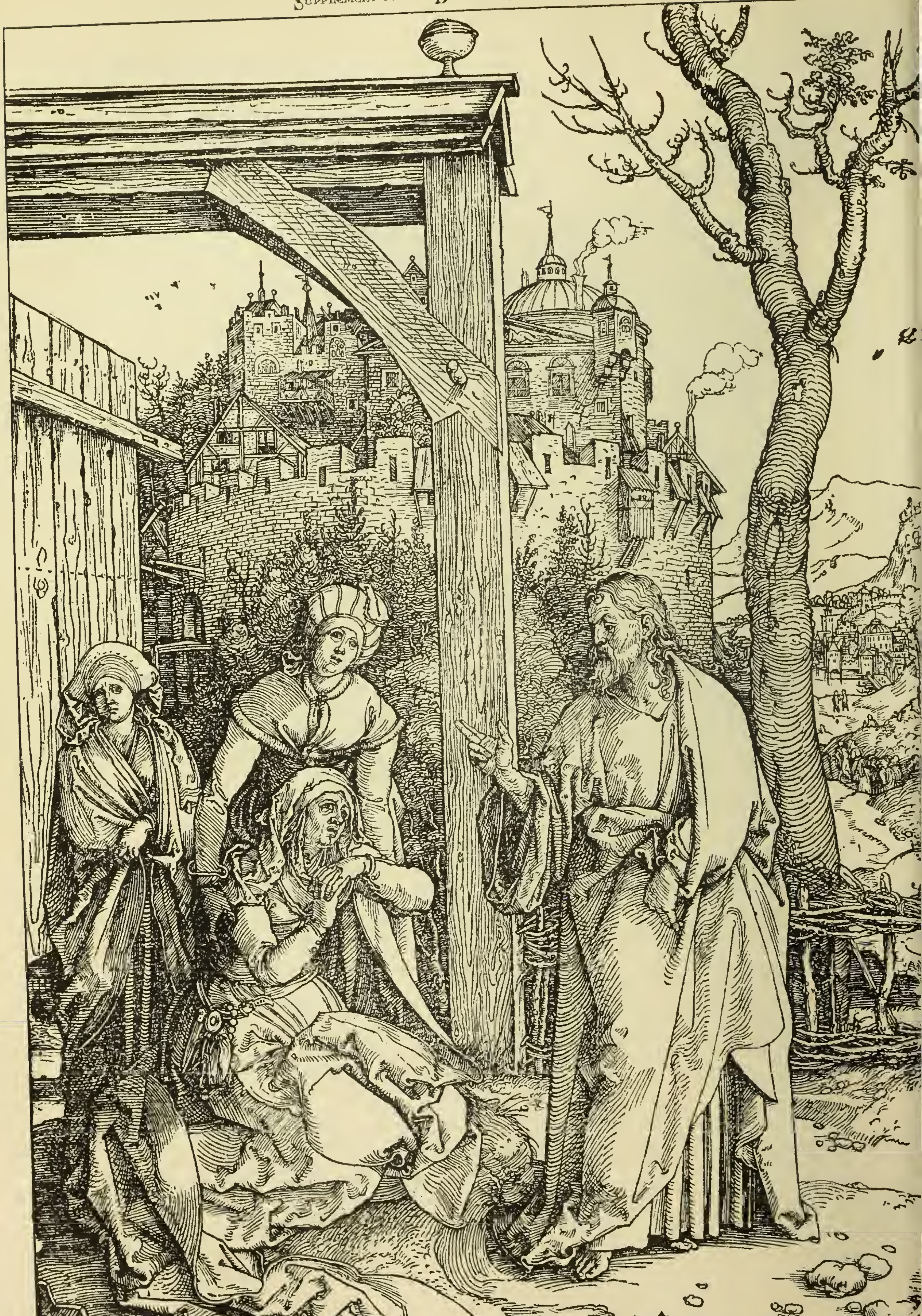
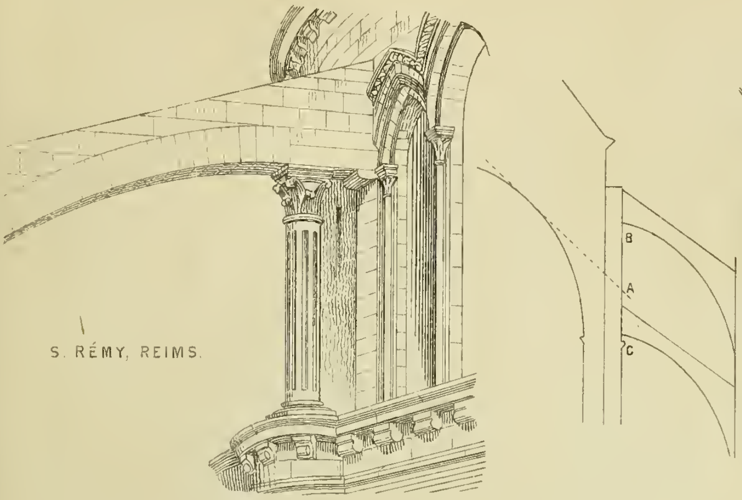


Photo-Lithographed by Whiteman & Bass

CHRIST TAKING LEAVE OF HIS MOTHER BY ALBERT DÜRER.



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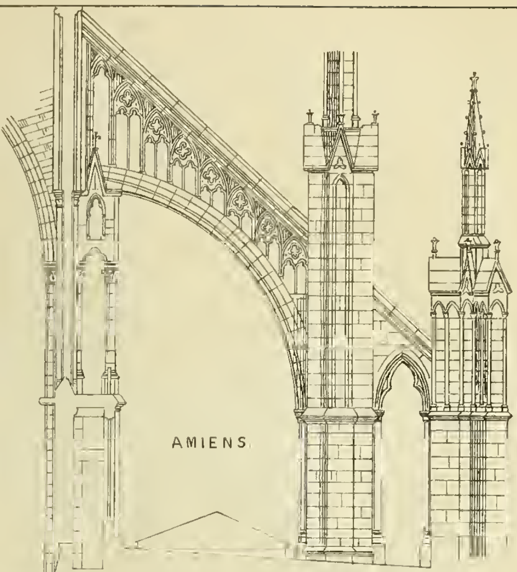

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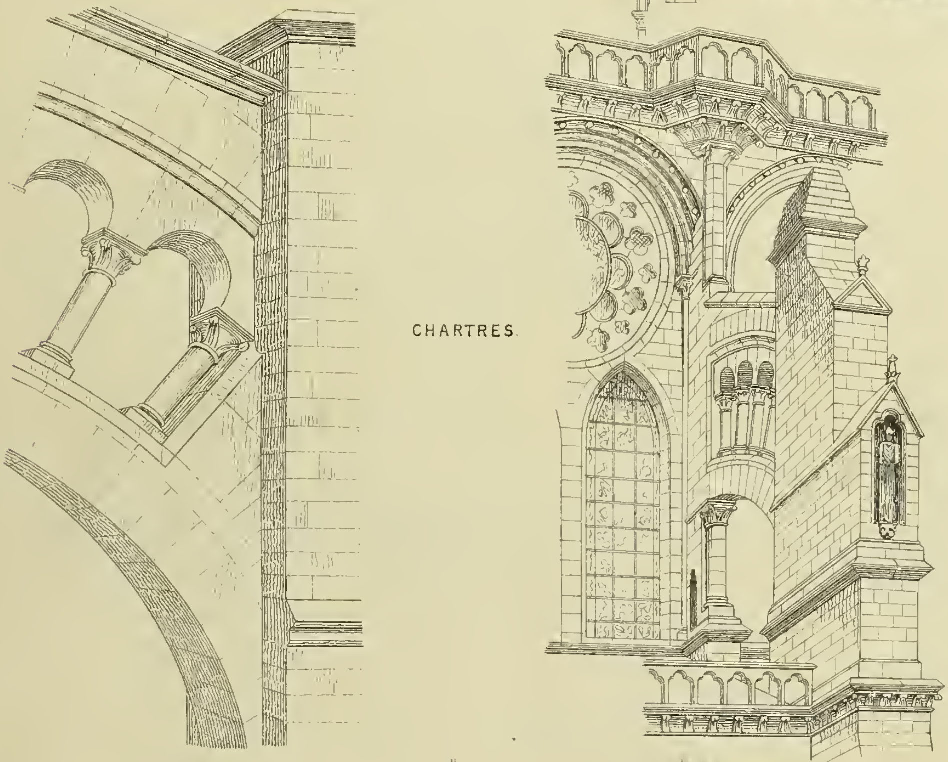

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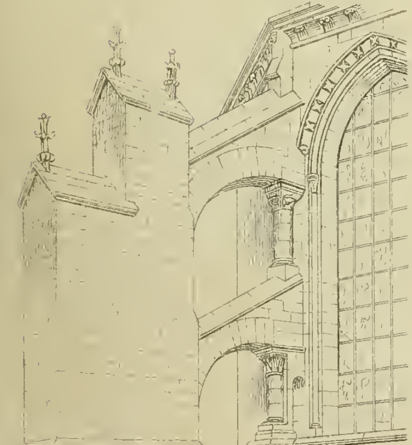

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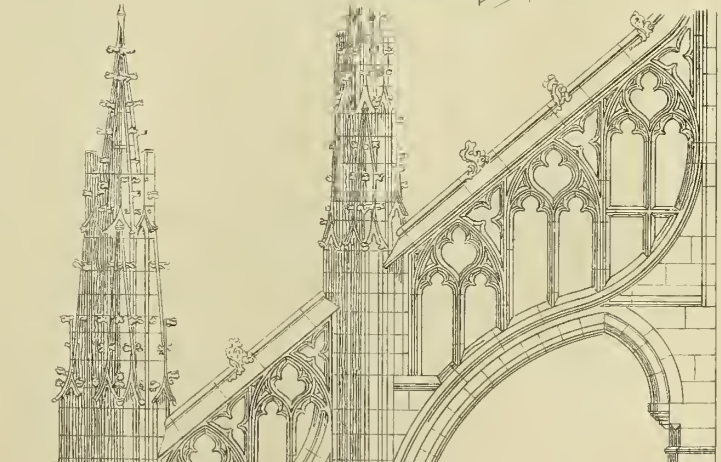

S. WULFRAND ABBEVILLE

FLYING BUTTRESSES. (FROM VIOLLET-LE-DUC, 'DICTIONNAIRE RAISONNÉ DE L'ARCHITECTURE'.

Printed by Whiteman & Bass

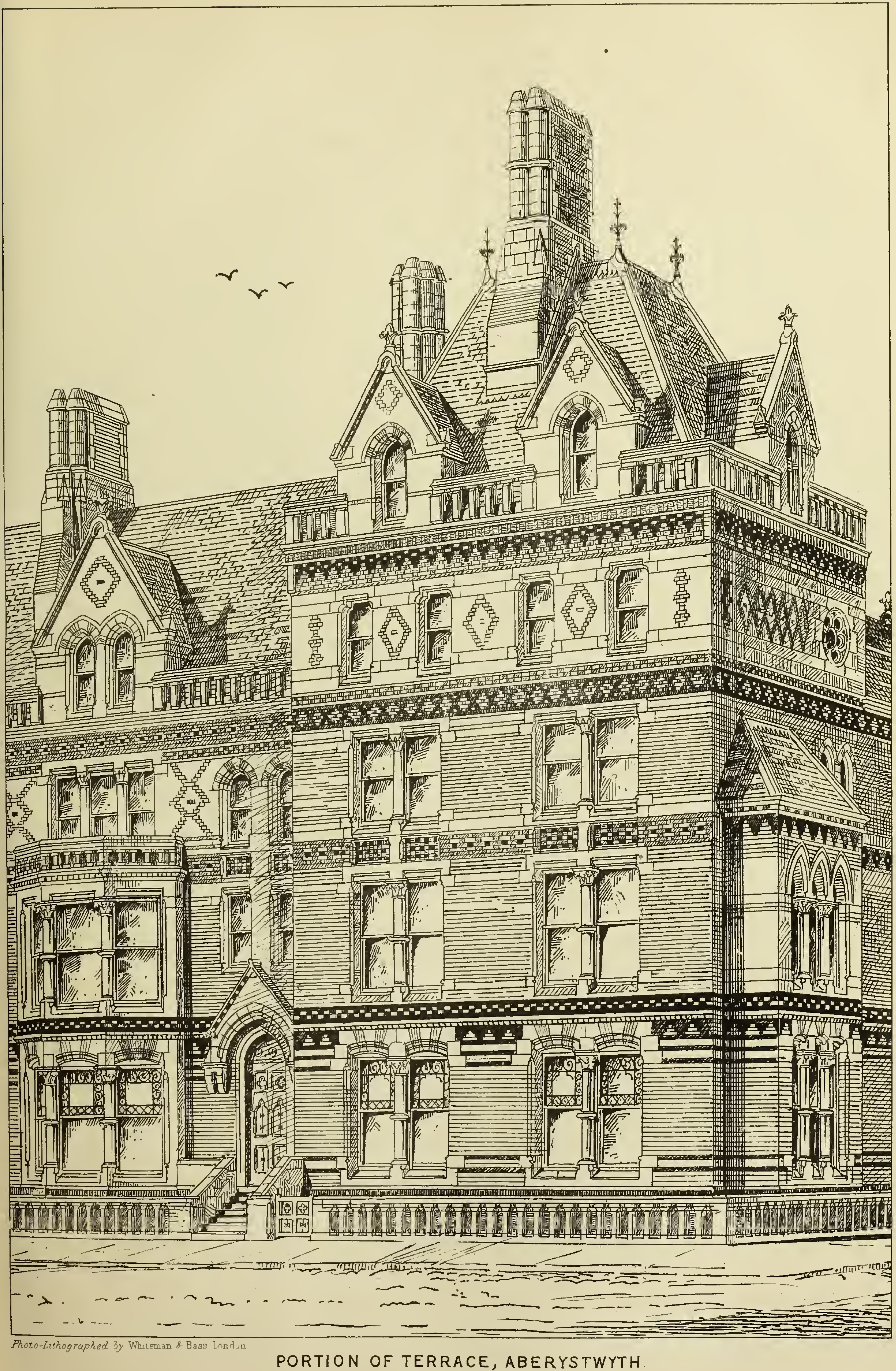

Photo-Lithographed by Whiteman & Bass London

PORTION OF TERRACE, ABERYSTWYTH.

J. P. SEDDON ARCHT.

BUILDING NEWS SKETCH BOOK.

THE prizes offered by us in the Building News of June 18, 1869, have been awarded by the votes of the competitors as follows :—

1st prize of £10 10s., to Mr. H. A Gribble, for his sketch No. 17, "Westminster Abbey, North Transept," Feb. 4th, 1870.

2nd prize of £7 7s., to Mr. Thomas Cox, for his sketch, No. 26, "Peterborough Cathedral," April 29th, 1870.

3rd prize of £5 5s., to Mr. T. Lennox Watson, for his sketch, No. 3, "Melrose Abbey, South Transept," Sep. 17th, 1869.

Without disclosing the secrets of the ballot, we may just say that Mr. Gribble has taken the first prize by an overwhelming majority of votes. Next to him on the list stands Mr. T. C. Wilberfoss, closely followed by Mr. Deshow; Messrs. Cox, Drinkwater, Ladds, Greensted, Langham, Grant, and Watson, possessing equally the smallest number of votes. The second prize is more closely contested, being won by Mr. Cox by a narrow majority compared with that of Mr. Gribble. Messrs. Wilberfoss, Deshow and Gribble, tread very closely on his heels. Mr. Watson and Mr. Grant come next; and Messrs. Hicks, Parker, Greensted, Bingley and Garratt follow at the bottom of the poll. The third prize is even still more narrowly won by Mr. Watson, Mr. Gribble very nearly being successful in carrying it off for another of his sketches (No. 8, Plympton S. Mary, Nov. 5th, 1869). Next follow Messrs. Drinkwater, Cox, Langham, Deshow, and the anonymous contributor of sketch 45 (Dunblane Cathedral, Oct. 14th, 1870), the lowest position of all being equally shared by Messrs. Ladds, J. Smith, Wilberfoss, Bethell, Dobson, Stevenson, Smales, and the contributor of sketch No. 9, whose name we do not know, and whose monogram is undecipherable.

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THE INSTITUTE.

SOMEWHAT contrary to our expectations, the President of the Institute has had pretty much his own way as far as the Secretaryships are concerned. Possibly the new arrangement may be found, on trial, to work well. If so, all we can say is, that it might have been obtained at less cost. A question affecting the constitution of the society, and involving the destruction of two officers—either of whom has done more than Mr. Wyatt for the Institute—should at least have been submitted to the consideration of Council before it was launched at a general meeting of the members. Common courtesy towards his brother officers should have suggested such an ordinary course on the part of the President. Had it been first discussed in Council, and the probable advantages of the suggested new arrangement set forth, both Mr. Donaldson and Mr. Seddon, being reasonable men, and having the interests of the Institute at heart, would no doubt have cheerfully acquiesced in the change. But the President, either in his impatience to effect reforms, or fearing that he should not succeed in a Council meeting, precipitated matters as indicated in our first article last week. One of the immediate results was that Mr. Donaldson, an Hon. Sec. and ex-President, feeling that an undeserved slight had been cast upon him, resigned his office and Fellowship, and we are surprised that Mr. Seddon did not follow his example. We think that any four out of five high-spirited gentlemen would have acted as Mr. Donaldson has done. Any one who knows anything of Mr. Donaldson's connection with the Institute must know how deeply he was interested in its prosperity; the same might be said, in a modified degree, of Mr. Seddon. Had these gentlemen neglected the duties they undertook to perform, or were they mere cyphers, the President would scarcely be justified in his impatient proceedings. These proceedings have already produced bitter fruit. One Hon. Sec. has terminated his connection with the Society, and the other Hon. Sec., though he felt himself affronted, has curbed his feelings and condoned the offence. Let us hope, for the sake of the future peaceful working of the Institute, that the recent action of the President may not be regarded as a precedent. We do not so much object to the matter of the new arrangement as to manner of bringing it about.

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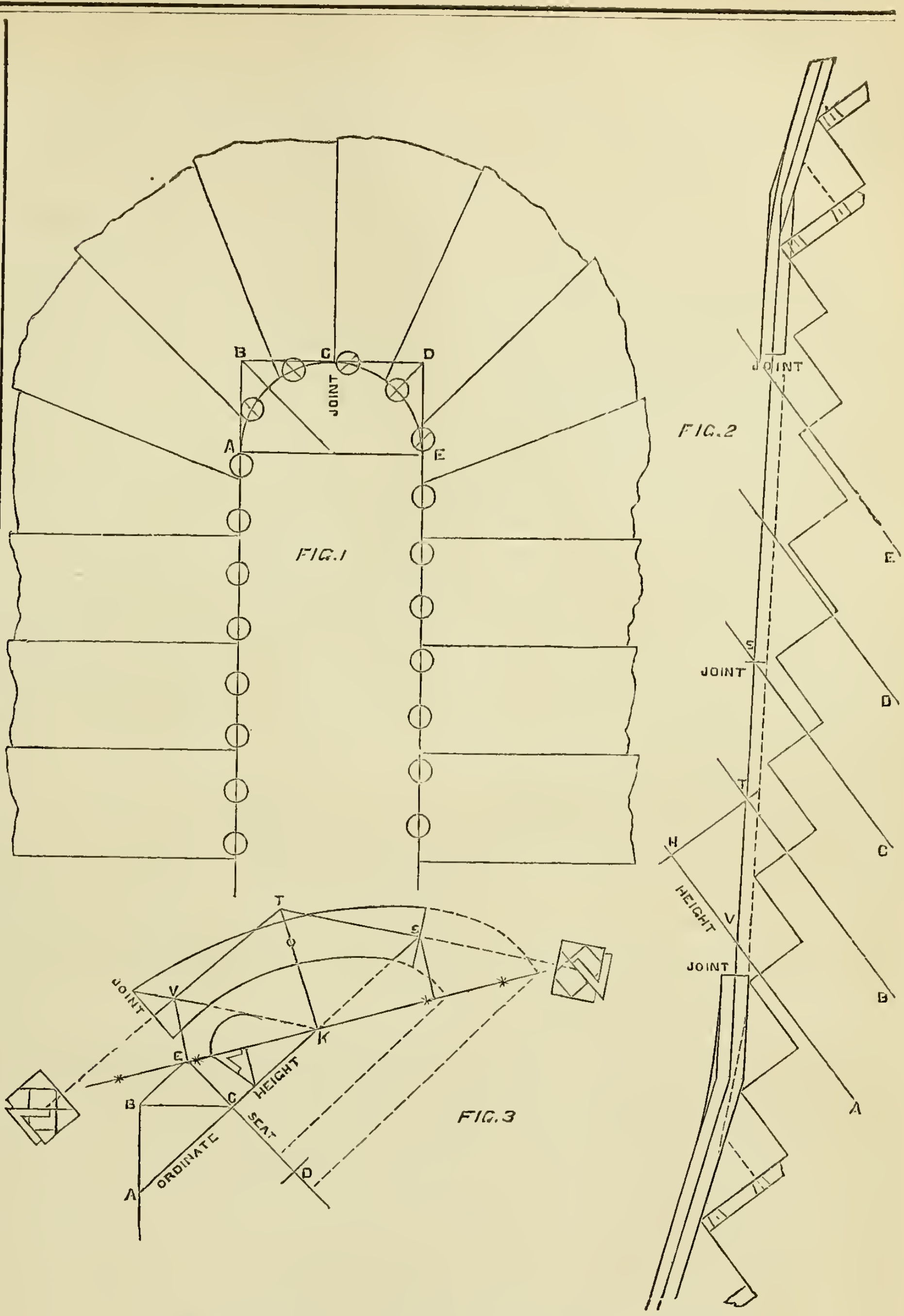

NEW ELEMENTS OF HAND-RAILING.—PLATE XXV.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 180.)

Plate 25.—Construction of Semicircular Stairs Having Eight Winders.

FIGURE 1 shows ground plan. Circle, or centre line of rail struck with a radius of eight inches. Narrow end of winders equal to a half square step.

Enclose circle with tangents A, B, C, D, E. These having cut the winders, give a direction to unfold them, measuring on tangent lines, and not on the circle.

Fig. 2 shows tangents and winders spread out. Letters along the margin correspond with those on plan. Adopt the same method as that for laying out a string. The object being to find pitch and height of wreath over winders. Also, of lower and upper ramps.

Let square steps stand in same position as those on plan. Have lower side of rail rest on corners of square steps.

Set off half its thickness. This gives direction to draw pitch, cutting through S, T, V. Being a straight line makes the pitches of wreath equal, and construction of mould simple.

The lower and upper part of wreath are equal heights. Centre joint is at S. Then H V shows half the height between V and S.

Fig. 3 exhibits construction of mould. Commence by making two sides of a square. Let A A B C equal corresponding letters above. Join A C extended. This is ordinate; being the diagonal of a square. Draw from B parallel with ordinate. Make seat square with it. Let C K, the height, equal that of H V on the right. Join E K extended. This is pitch and major axis.

To find points for striking curves :—Let D C equal C B. Set off on each side of D half width of rail. Square up to cut the pitch.

The most practical way is :—Have a piece of board suitable for mould. Lay it on, and mark E K. Let distance on right equal E K. Square over lines. This done, run a gauge, say an inch from the edge. Then let E V and that of S, equal E B. Make K T equal C A. Join

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

S T and T V extended. These are tangents on mould; and to be correct, must equal pitches on the right.

Next, let K O equal B C. Then set off on each side of O half the width of rail. All is now ready to sweep the mould with a string.

Pitches being equal, one bevel answers for joints, as the application shows.

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METROPOLITAN IMPROVEMENTS.

Battersea.—The Metropolitan Board of Works has approved of Messrs. Beeston & Co.'s plan for the formation of three roads on the Parkfield Estate, Battersea, in continuation of roads known as Grayshott-road, Armfield-road, and Acanthus-road, upon condition that the existing barriers in Grayshott and Acanthus roads be removed, and that no other barriers to the traffic be erected on the estate. The Board has also decided to contribute one-half of the cost of an improvement proposed to be carried out by the Wandsworth District Board by the widening of a portion of Park-road, Battersea, at an estimated cost of £350, such contribution not to exceed the sum of £175.

Bermondsey.—At the last meeting of the Metropolitan Board of Works it was decided, on the recommendation of the Works and General Purposes Committee, that the Board should contribute one half of the cost of improving the thoroughfare at Nutkin's Corner, Bermondsey-wall, estimated by the Vestry at £870, exclusive of professional charges, such contribution not to exceed the sum of £435, and to be paid to the Vestry on a certificate by the architect to the Board of the completion of the work, and that the Board should contribute one half of the cost of an improvement proposed to be carried out in Blue Anchor-lane, at a cost of £130, exclusive of professional charges, such contribution not to exceed the sum of £65.

Shoreditch.—A Bill has been read a second time in Parliament enabling the Metropolitan Board of Works to widen High-street, Shoreditch. The street is to be widened on the west side thereof, commencing at the house No. 163 and terminating at Old-street-road. The Act stipulates that the Board shall, not less than eight weeks before they take in any parish fifteen houses or more occupied either wholly or partially by persons belonging to the labouring classes as tenants or lodgers, make known the same by placards, hand-bills, or other general notice placed in public view upon or within a reasonable distance from such houses, and the Board shall not take any such houses until they shall have obtained the certificate of a justice that it has been proved to his satistaction that the Board have made known their intention to take the same in the manner required. The Board is empowered, for the purposes of the Act, to borrow such money as they may from time to time require, not exceeding on the whole £150,000, and all the provisions of the Metropolitan Board of Works (Loans) Act, 1869 (except the limitation of amount in section 38 of the Act), shall extend and apply to such borrowing.

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THE BRITISH TOWN AND FORT ON CAER SEION.

At the monthly meeting of the Archæological section of the Birmingham and Midland Institute, held on Thursday week, Mr. George Jabet read a paper on "The British Town and Fort on Caer Seion." The lecturer entered into a minute description of the situation of the town and fort on the hill which overlooks the Conway Bay, and also made some remarks upon points of interest in the surrounding country. The town and fort were on the hill on the left bank of the River Conway, which was the chief line of defence to the Welsh, although it was but a small river. Caer Seion was never occupied by the Romans, and consequently it remained unaltered, and furnished them with a specimen of an ancient British fortification and town. The lecturer, with the aid of some diagrams, gave a description of the remains as he saw them when he visited the locality, and stated the conclusions he had arrived at from the position of the mounds, the circles of stones, &c. In the course of his observations he explained that the modern meaning of the word town was not applicable in this case. In its true and etymological sense, however, it could be correctly used. In this sense it meant an inclosure, and there appeared to have been such an inclosure in this instance, as well as a series of forts which overlooked the town on the east and the west. Upon investigating the site it was evident that the huts were placed on the side of the hill which was easiest of access and most liable to surprise, and at points from which the advance of the enemy could be easily descried. In addition to the main body of the huts being placed on the most exposed side of the hill, there were two huts which were situated in more advanced positions, and which might be described as the abodes of those whose special duty it was to announce the approach of any hostile force. The hut of the chief, however, was placed in the part which was least dangerous, and this was a wise arrangement, because if the chief were taken or killed by surprise, it was probable the town and fort would also be taken. Cæsar admitted that the British showed no little skill in the arrangement of their camps. As to when the town and fort were first constructed it was impossible to say. It was not improbable that the hills of Britain were fortified with parallel entrenchments even before the Celtic tribes landed on its shores. The Celts on their arrival might only have conquered and occupied these strategical points, just as civilised powers in the present day took and occupied neighbours' territory under the name of material guarantee. Long before, perhaps thousands of years before the Celtic tribes—certainly before the Cymri—set foot in Britain, the country was inhabited by some tribes which about the same period occupied the greater part of Europe.

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THE ALBERT MEMORIAL AND THE ALBERT HALL.

Our contemporary the *Examiner* hastens to congratulate the Chief Commissioner of Works, or whoever may claim the credit, "on the decisive step just taken to ensure a critical public's appreciation of the group formed by the memorial to the late Prince Consort, with its accessories, and the round-house nearly completed in front of it. Until the last few days a careless observer might possibly have failed to note the daring defiance of all rules of beauty and fitness by which two styles of architecture, hopelessly irreconcilable and perfect in their antagonism, have been brought into close proximity. But by an ingenious deflection of the broad walk which stretches across Kensington Gardens from the church at Lancaster Gate to the iron gates on the south of the Gardens, the visitor is now conducted at once to the Memorial, and all danger of the artists' skill in association and juxtaposition being overlooked is removed. This placing of the Gothic structure, the style of which is associated in our minds with grave and solemn contemplation, in conspicuous relief against the squat rotundity and Franconish aspect of the music-hall, or whatever other name it may rejoice in, would be amusing in its absurdity if it did not furnish another melancholy reason for believing that it is utterly impossible for us to achieve, or even conceive, anything like architectural propriety; and to make matters worse, the newly-opened walk leads the spectator up to the Memorial in a false line, as it were. The apex of that building ought, to the eyes of anyone approaching it, to coincide with the centre of the cupola of the hall. But it does not, and the effect, besides making the observer feel as if he were labouring under an obliquity of vision, is to give the monument the appearance of being out of the perpendicular: unless, indeed, it should unfortunately turn out that the Memorial tower possesses inherently a Pisan propensity to lean. When the obelisk was erected on the Place de la Concorde, though that erection was criticised at the time as injudicious, care was at least taken that the column should exactly bisect the Arc de Triomphe as the two objects were viewed from the Tuileries."

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Portland Breakwater.—On Saturday week the operations connected with the construction of the Portland Breakwater were brought to a close by the depositing of the last stone, without the slightest display or ostentation, Mr. Coode, the engineer-in-chief, being present at the time. The gales of the last five or six months, many of which have been unusually severe, have not done the slightest damage to the work. It may, therefore, not only be regarded as finished, but safe from injury.

ARCHITECTURAL ASSOCIATION.

At the usnal fortnightly meeting of this Association on Friday evening last, the President, Mr. Thomas Henry Watson, occupied the chair, and the following gentlemen were elected members :—Messrs Henry Vacher, Henry Crisp, and F. Wooding.

Mr. G. H. Birch was to have read a paper "On Christian Symbolism"; but owing to illness, he had been unable to prepare one. In his stead therefore,

Mr. W. Paris, an architect well known for his works in India, read a paper

ON THE PUBLIC WORKS DEPARTMENT OF INDIA,

of which the following is an abstract :—

Mr. Paris commenced by quoting the old maxim —"A man cannot be Jack of all Trades"; of which he said the Public Works Department of India afforded an apt illustration. The Public Works Department is a very large and important branch of the Indian Government, and it includes a great number of different departments, such as those of irrigation, railways, harbour, defences, architecture and the fine arts, &c. The appointments which Mr. Paris held were such, he said, as to enable him to realise most thoroughly the the utter fallacy of the Architectural Department as at present constituded in India. Prior to 1863, the office of Architect to Government, or as he he was then designated, "Civil Architect," was held by an officer of the Royal Engineers. The appointment was usually given to a senior officer, as in those days it was one of the highest paid sinecures of the service. In 1864, Government instituted an Architectural Department, and in due course, an Architect to Government was appointed both in Calcutta and Bombay. During Mr. Paris's tenure of office, he had great opportunites of tracing the source of the evil of Public Works Department architecture. When he first went to Bombay, the T-square was quite unknown, and it was only after a considerable time that the Royal Engineers and their assistants took kindly to its use. As Architect to Government, it was his privelege to receive all designs from those about to build on the land purchased from Government; and after duly criticising them it was his duty to forward them to the Government for final approval. The designs in most instances were ludicrous in the extreme. Mr. Paris narrated the following, as giving a fair illustration of a Bombay architect, such as Government is pleased to encourage in the nineteenth century. A Parsee (who signed himself "Architect and Surveyor") was requested by a native of considerable fortune to design him a house for one of his plots of land on the Esplanade. The Parsee readily complied, and prepared his design, which in due course he submitted to Mr. Paris. The design, however, was so bad, and showed such an utter ignorance of architecture (it was supposed to be Palladian) that Mr. Paris was induced to ask the Parsee what training he had received as an architect. "Oh," he remarked, "I have 'Gwilt's Encyclopædia,' and two or three other books from which I copy, but I never had any instruction." This was no solitary instance, and it was not to be wondered at that the buildings throughout India are a disgrace to the British Government, and unworthy of the name of architecture. The Government selects its architects from the Royal Engineers, Civil Engineers, and infantry and cavalry officers, and Padies, and at the present time the only architect by profession in the Governmental service that Mr. Paris knew of is Mr. Moleccy, his fellow-pupil, and he is an assistant to a Colonel of the Royal Engineers at Bombay. In the benighted Presidency of Madras, as it is called, they have a quasi-architect to Government, but his title as such is suppressed altogether, and he is called an "Executive Engineer." In private life he enjoys the title and reputation of "Architect to Government," and he does the work appertaining to that appointment. It was simply from the fact o his title being kept *sub rosa* that he escaped the wholesale clearance that was made in the Architectural Department in January of last year The officer referred to is a civil engineer by profession, and not an architect. In India, any man "who has a taste that way" (as is the expressio used by the Indian Government officials), be h ever so ignorant of architecture, is sure to b singled out as a man of rare talent, and possibl called upon to prepare details of the design c some well-known architect at home, and the misfortune is that those holding the highest Government appointments are, as a rule, so ignoran of art and architecture that they cannot detec the difference between an inferior and a meritorious design. The Government has an extraordinary idea that when once a small-scale design is prepared the architect's duties cease, and it is presumed that the officer who carries it out must of necessity be perfectly competent to work out the full-sized details, and hence one never had any particular satisfaction in preparing a design. It was truly distressing to watch the progress of Government buildings, as in all cases (except when models were prepared at the School of Art) the detail was simply the ignorant rubbish and insipid attempts that would naturally result from natives being employed upon it. Hindus and Parsees are engaged in designing Gothic caps and every other kind of detail. Mr. Paris quoted one instance where a Hindu was called upon to design a reredos for a church, and not only did he do so, but he actually modelled its ornament. The result might be imagined. One need not be surprised, therefore at the specimens of the Public Works Department in every station and cantonment of India, when, even in a highly-civilized city like Bombay, so much encouragement was given to the non-initiated. Of the old Public Works Department architecture at Bombay, the Cathedral, the Townhall, the Jamsetjee Hospital, &c., are beyond criticism, as they were built at a time when architecture was at a very low ebb, even in England; but now that architecture is an acknowledged profession, and that there is a School of Art in Bombay, it is a sad reflection upon Government that they should tolerate so anomalous a state of things. Sir Bartle Frere did much during his Governorship to encourage art and architecture, and Mr. Paris expressed his indebtedness to him for many acts of kindness and sympathy during his Indian career. It was during Sir Bartle's tenure of office that the School of Art was established, and he it was who was most instrumental in introducing architecture into the Government service; and Mr. Paris was of opinion that had Sir Bartle remained in office the Architectural Department would not have been a victim to the retrenchments which were called for by the Supreme Government at the beginning of last year. In proceeding to give his impressions of architecture "up country," Mr. Paris said that in every station and cantonment that he visited throughout all parts of India he found the inevitable "P. W. D." stamped on every church, hospital, barrack, memorial, &c. Nowhere out of Bombay (save a few exceptions in Calcutta) did he meet with a single building which was not an abomination. There were, however, degrees of badness; but in no case did he meet with a successful design or good details. At Umballah is perhaps the only church worthy of mention. It is a specimen of the Decorated period of English work, and at a distance it might be mistaken for a good thing, but on close inspection it is found to be built of stucco, and the details are (as usual) carried out by ignorant hands, although there are decided evidences that an architect must have designed the building originally, the proportions and massing of the whole being unquestionably good. At Delhi is a very fair attempt at architecture in the building for the Government Museum; and it may fairly be concluded that an architect must have been concerned in its design. Mr. Paris thought it was greatly to be regretted that more encouragement was not given to the Hindus and Mahommedans to follow up their own peculiar styles of architecture, for it is too painfully evident that in domestic architecture they are losing all traces of their indigenous art, and in its place they were engaged daily in erecting buildings of a bastardised type of the very worst description of nondescript Classic.

Having read some extracts from Indian journals, showing the necessity for an improvement in matters architectural on that continent, Mr. Paris proceeded to give a sketch of the rise and progress of Indian architecture. The very earliest architectural history in India commenced with Sakya Muni (or Buddha), who died 543 B.C. Buddhism flourished for about a thousand years, when it gradually faded into the style contemporaneously elaborated by the Jains and Hindus, and dying out with the religion that gave birth to it. Next came the Dravidian tribes, who crossed the lower Indus into Guzerat, and who now occupy the whole (or nearly so) of the Madras Presidency, and are one of the greatest building races in the world. The next immigration commenced a century or two before the Christian era. They came across the lower Indus, occupied Guzerat and Rajpootana, and eventually extended to Mysore on the one hand and to Agra and Delhi on the north. The fourth great immigration was that of the Mahommedans, from the eleventh to the thirteenth and fourteenth centuries. They came across the upper Indus, and eventually spread down as far as Mysore. The earliest features of Buddhist art are topes, which consist of detached pillars, towers, and tumuli, all of a sacred or monumental character. The earliest specimens of topes consisted of single pillars (called lâts). The largest and most interesting tope is that of Sanchi, in Central India, of which some interesting casts may now be seen in the South Kensington Museum. The Buddhists did not build their temples and monasteries, but cut them out of the solid rock. The rock-cut temples and monasteries (or caves, as they are usually called) of Karli, between Bombay and Poonah, are the largest and most complete discovered in India, and were excavated at a time when the style was in its greatest purity. The exact date of their excavation is not precisely ascertained, but Mr. Fergusson ascribes it to the era of Salivahana (A. D. 78). Sad indifference is shown by Government for the preservation of these ancient and most interesting relics of by-gone ages. At the end of the cave, and in about the same relative position as that occupied by an altar in a Christian church, is placed the shrine—in this instance a plain dome slightly stilted on a circular drum. This is now covered with the cheapest description of bed-room wall-paper; and again, on either side of the entrance of the exterior façade are colossal sculptures of Hindoo mythology; these have all been painted a very brilliant yellow, and the features of the faces picked out in red and black, according to the caprice of the artist. All this has been done since 1864. The caves at Ellora, Kenneri, and Elephanta are also subject to similarly infamous treatment. It is strange to observe in caves of this class in India the reproduction of the still earlier wooden architecture into the lithic or stone excavations of the more modern ones. After dwelling at some length on the characteristics of these caves, and giving a slight sketch of the habits of the Buddhist monks or priests, Mr. Paris proceeded to speak of Jaina architecture. The religion of the Jains, he said, rose to importance only on the decline of Buddhism, which in many respects it resembles. Their temples are very costly and beautiful, as a rule, and their detail is full of the most interesting matter. Mysore and Dhauvai boast of a great number of Jain temples. The lotus of India is the prince of aquatic vegetables, and in Hindu mythology it is the emblem of female beauty. Brahma, it is said, sprang out of a lotus from the navel of Vishnu (the preserver); and throughout the Hindu ornamentation the lotus is the general characteristic feature. Jewellery is greatly introduced as a type of decoration. There is a marked resemblance in the conventional form of the lotus and the egg-and-tongue moulding of the Romans. Mysore and Dhauvai boast of a great number of Jain temples. The Jains, like their predecessors, the Buddhists, were great tower builders. At Chittore is a remarkable specimen built by Khumbo Rana. Mr. Paris next proceeded to give a hurried sketch of the architecture of India from the time of the first invasion by the Mahommedan tribes. In the course of his remarks under this head, he described the special characteristics of Ahmedabad and its architecture. Ahmedabad, in its most prosperous times, contained two millions of inhabitants, and its circumference was more than thirty miles. Of the numerous buildings in and about Ahmedabad, it is impossible in a slight sketch to give any thing more than a few remarks on this most wonderful of ruined cities. It was the singular fortune of the Mahommedans to find themselves among a people (*i.e.*, the Hindus) their equals in conception, their superiors in execution, and whose tastes had been refined by centuries of cultivation. While moulding them, they were moulded by them; and although insisting on the bold features of their own minaret and pointed arch, they were fain to borrow the pillared hall, the delicate traceries and rich surface ornament of their despised and prostrate foes. Hence, the architecture of Ahmedabad is imbued with a great deal of the severity of the Moslem builders, with an admixture of Jain delicacy and refinement of detail. It was a practice with the great and wealthy Mahommedans to build their own tombs during their life-time; and from that fact we find the tombs are of great costliness, and are no doubt infinitely superior to what they would have been had they been monuments erected after death. The mosques of Ahmedabad have a marked resemblance to each other in their general plan and design. On plan they consist of a courtyard surrounded on three sides by colonnades, the fourth being occupied by the mosque itself. The minarets of these mosques are attached to the central compartment, flanking each side of the principal entrance. Perhaps the most charming features of detail in these mosques are the pierced designs which fill the square window openings. It is contrary to the Mahommedan faith that the human form or animal life of any description should be introduced into the ornamentation of their buildings. The tanks at Sirkhy and Kankria, and the aqueducts and wells in the neighbourhood of Ahmedabad, prove that the Mahommedans were not only great architects in those days, but great engineers also. Their works were carried out on the most extensive scale, and the workmanship of the masonry is faultless. It is very sad, though, to see all these glorious remains of the past fast disappearing, but is nevertheless a fact that hundreds of miles of Government roads in India are macadamised with the *debris* and ruins of old Ahmedabad and other places of antiquity. Whilst at Sirkhy Mr. Paris found that the Government had undertaken some repairs to one of the palaces on the edge of the tank, and out of curiosity he examined the restored work, which was carried out in utter disregard of the feeling of the old work. These repairs were carried out under the instructions and superintendence of a lieutenant of the artillery, thus affording another instance of the anomalous system in the Public Works Department of making soldiers archæologists instead of keeping them steadily at work at their own peculiar profession.

A short discussion ensued, and the thanks of the Association having been unanimously tendered to Mr. Paris for his paper, the meeting terminated.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the special general meeting on Monday evening last, the President, Mr. Thomas H. Wyatt, in the chair, the discussion as to the office of secretary to the Institute (referred to in our last impression) was continued. An amendment was proposed to the effect that the question should stand adjourned for the present. But the amendment having been put to the vote was lost. After which it was resolved—"That there be two secretaries of the Institute elected anually, one of whom shall be paid such salary as the Council may from time to time determine, and that the word 'assistant' be omitted from Section VIII., in the bye-laws."

Attention having been called to Professor Donaldson's proposed resignation as Honorary Secretary for Foreign Correspondence, and retirement from membership, it was unanimously resolved "That this meeting has received with great regret the resignation of the late Honorary Secretary for Foreign Correspondence, and with still greater regret the announcement of his proposed retirement from the Fellowship of the Institute. It trusts that he may be induced to reconsider that proposal, and that the Institute may long retain the affectionate sympathy and active co-operation of its well-known and greatly respected ex-President, Professor Donaldson."

The next ordinary general meeting will be held on Monday evening next, when the members will proceed to ballot for J. B. Mitchell Withers, of Sheffield, as Fellow, and to elect examiners and moderators for the Voluntary Architectural Examination of 1871. The following paper will then be read: "On the Construction of Theatres," by E. Salomons, Fellow. After which a special general meeting, of Members only, will be held, to consider a proposed scheme for an annual conference of architects, to be held at the Institute.

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THE WELLINGTON MONUMENT IN S. PAUL'S.

THE Wellington Monument is one of those delightful little muddles which make us all so proud of British art and its connections with British officialism. Copies of further correspondence between Mr. Penrose and Mr. A. Stevens with different Goverment departments have just been published for the benefit of the House of Commons (and the Government printers), in continuation of a former issue. Mr. Stevens states that he is prepared to complete the monument without the equestrian figure by March, 1872, for £4,000. The First Commissioner of Public Works has taken possession of the model and materials of the monument, inclosing them by a hoarding in Mr. Stevens's studio, kindly offering him rent at the rate of 10s. per week for the space inclosed. Mr. Stevens can hardly be blamed for objecting to having his studio thus parcelled out like a building plot at a nominal ground-rent, especially when it is rendered unavailable for other purposes. The whole tone of the correspondence is, as might be expected from anything with which Mr. Ayrton had to do, most amiable and friendly.

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ART THEORIES.

Mr. F. W. MOODY, in a letter in the *Society of Arts Journal* on Dr. Dresser's Paper on Art, says:—What would the medical world say, if the College of Physicians lent their rooms and the *prestige* of their name to some enthusiastic herb doctor, who, entirely ignorant of anatomy or chemistry, proceeded to prove to the students that his herbs were the only true antidotes for all the diseases of the flesh? Would not the medical world blame the College of Physicians rather than the poor herbalist? And has not the art world some right to expect that such an institution as that of the Society of Arts should take care that the lectures delivered in their hall are not the crude theories of half-developed artists, but sound instruction from experienced and learned men?

And now, sir, would you allow me to say a word about art theories, for I, too, have a theory about art, and my theory is, that theories of art are the curse of the age. We have now had more than thirty years of them, and I am convinced that if half that time had been spent in work, we should long ago have been in the full swing of a great era of art. A man must have used his wits to very little purpose if he has not long ago perceived that, with very few exceptions, the theories of the day are either the sophistries spun by the weak, with the vain attempt to keep the strong within the narrow limits of their own capacities, or they are the dogmas of critics, by which they can easily condemn those they do not understand. They are cheap patent Procrustean bedsteads, on which the critic in imagination lops off the limbs of the giants he has tied to them; but, if we trace these theories to their source, we invariably find nothing more than the "*I*." "*I* say so."

A theory, like a mummy, is enshrined in many cases. The outside is very gorgeous; it is written over with the names of the gods, and with symbols and mysteries; but, when you have taken off case after case, and roll after roll, each more tedious and intricate than the rest, you come at last to a poor, little, black, wizen monkey of a man.

I know only one use of art theories, and that is a very small one. If an artist talks to me on such subjects for a quarter of an hour, I know what he can do quite as well as if I saw his work. And I have had many a talk with theorists of all sorts, and I always say to my friend, "That is a very pretty theory of yours, and now will you come for a walk with me into Kensington Museum, and into the library there, and we will fit it on?" and I invariably find that in half an hour we have condemned most of the great men that ever lived. I am bound to confess that this result hardly ever weakens the confidence of the true theorist. If Raphael differs from him, so much the worse for Raphael. But I say to my friend, "No doubt my taste is depraved. I attribute that to the fact that I have been born and bred in that obscure quarter of the globe called Europe, and so I admire works which your Oriental tastes condemn. I am a plain man and no philosopher, and these things which you have proved to be on wrong principles seem to me the great works of great men, who probably knew their business quite as well, perhaps even been better, than a novice, or even an amateur."

The only cure for art theories (but that is a certain one) is art power. If the theorist is lucky enough to attain to this, he quietly drops his theories, for, if he is a wise man, he knows he has made a fool of himself, and he sets honestly to work to learn his business and redeem, if possible, the time he has wasted in nonsense. It will be a happy day for art when its votaries work instead of talk, and are no longer disturbed by the idle theories of the ignorant.

THE LONGEST TUNNEL IN ENGLAND.

THE London and North-Western Railway, from Liverpool and Manchester to Huddersfield and the North, passes through a range of hills separating Marsden on the Yorkshire side and Diggle on the Lancashire side, the range bearing the name of Stand Edge, and it has now three tunnels running through it—one a canal tunnel, and the other two for the purposes of the railway. The first-named was commenced in 1794 and completed in 1811; length, 5,451 yards, or three miles and 171 yards; cost, £123,803; and the loss of life during its progress was serious. The first of the two railway tunnels was made by Mr. T. Nicholson, contractor for the Woodhead Tunnel, which is shorter than the Stand Edge one by about 40 yards, Stand Edge being three miles and 60 yards long. It was commenced in 1845 and completed in November 1848; the cost was £171,003 12s. 3½d.; of the approaches £30,605., making a total of £201,608., and the largest number of men employed on the undertaking was 1,953. Nine fatal accidents occurred in its construction. Messrs. Thomas Nelson and Sons, of Carlisle, were the contractors for the new tunnel; the work was commenced in the middle of April, 1868, and was completed in the middle of October, 1870, or six months earlier than the time specified. Its exact length is 5,435 yards, one yard less than its twin tunnel; but the actual length constructed by the Messrs. Nelson is 5,297 2-3 yards, the difference arising from a short piece at each end having been made when the first railway tunnel was executed. The whole length is lined with red bricks, faced with blue Staffordshire bricks. The height of the tunnel inside the brickwork is 20ft., and the width 15ft. The total quantity of brickwork built is 52,156 cubic yards, the total number of bricks used being 16,831,149, the weight of which amounts to 68,000 tons; 6,271 tons of coal, 472 tons of coke, 2,421 tons of lime, 140 tons of cement were consumed; and of powder 1,744 casks, equal to 174,400lb.; fuzees, 35,853 coils, each 25ft., equal to 170 miles; candles, 8,745 dozen pounds, equal to 104,940lb.; oil, 6,416 gallons; and vast quantities of timber were used. The rubbish was conveyed away by means of tramways, which ran through passages under the railway, and was tipped into boats on the canal before mentioned. It was conveyed through "break-ups" or cross-headings, of which Messrs. Nelson constructed 21; but only 16 were used at one time. For the conveyance of the material used in the construction of the tunnels 25 boats and four steamboats were constantly plying, and an immense expense had to be incurred in erecting huts, providing business offices, and putting down costly plant for economizing labour. Only one life has been lost during the construction, but there have, of course, been plenty of accidents of a less serious nature. The work has been pronounced satisfactory in all respects, and the line is reported as being one of the smoothest portions of railway travelling in the kingdom. The line was opened about the middle of last month for regular traffic.

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PARLIAMENTARY NOTES.

The Wellington Monument in St. Paul's Cathedral.—The Marquis of Lansdowne, on Friday, in the House of Lords, moved for the production of all further correspondence relative to the Wellington Monument that had passed between Mr. Penrose and Mr. Stevens with any department of her Majesty's Government up to the present time.—The Lord Chancellor put the motion, which was carried.—The Earl of Cadogan said that after the correspondence had been laid on the table of the house he should call attention to the subject. Lord Overstone was about to address their lordships, when Lord Chelmsford reminded his lordship that the motion was carried. Lord Cairns said some misunderstanding had arisen from the hasty manner in which the motion was put from the Woolsack. He had not the remotest conception what the motion was about. The Marquis of Lansdowne said the only explanation he could afford their lordships was that he was asked as a matter of form by the noble earl (Cadogan) to move for the production of the correspondence in order that the subject might be brought before the house. Lord Overstone said the history of this transaction was a very curious one, and it was necessary that public attention should be called to it without delay. When the House of Commons voted a sum of money for the erection of a monument to the late Duke of Wellington in St. Paul's Cathedral, he formed one of the committee who selected the designs. After that, the Government determined to change the site, and they chose another design. The sum voted had been spent, and all the country had got for its money was the fragment of a monument in St. Paul's Cathedral and certain other fragments now lying in the artist's studio. He had been informed that the Government had made an effort to enter into an arrangement whereby they would have greater control over the artist than they had at present, so as to be able to give an assurance to the country that the work would be speedily completed. He hoped that would be the case, but he was by no means confident of it.

Epping Forest.—Sir H. T. S. Ibbetson, on Monday, asked the Chancellor of the Exchequer whether he was aware that the timber in High Beach, a part of Epping Forest, was being marked previous to being cut down by private people; and if so, whether he was prepared to take any steps to restrain such action till the question as to the enclosure of Epping Forest had been decided.—The Chancellor of the Exchequer was sorry to say it was not in his power, even if he were willing, to take any step in the matter. The Government had had no property in the land of Epping Forest, but only forestral rights over it, and their rights had been extinguished.

The Wellington Monument.—Mr. Heygate on Tuesday asked the First Commissioner of Works what steps had been taken since November, 1870, to secure the completion of the Wellington Monument by some sculptor of established eminence.—Mr. Ayrton replied that the subject had been under the consideration of Government ever since November, 1870, to ascertain if any arrangement could be made in reference to it, but they had not as yet arrived at a final determination, but would do so in the course of a few days, when the papers would be laid on the table.

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Building Intelligence.

CHURCHES AND CHAPELS.

Oxton.—The foundation-stone of a new Wesleyan chapel was laid last week, at the corner of Palm-grove and Talbot-road, Oxton. The cost of the entire building, when completed, will be about £6,000. The edifice will be constructed of Yorkshire stone, with Stourton dressings. The first part of the building to be erected will accommodate 300 worshippers, but when entirely completed it will seat 600 or 700. The architect is Mr. C. O. Ellison, and the contractor for the work is Mr. Alexander Bleakley, of Birkenhead.

Rugby.—On Monday week last the foundation-stone of a new tower at the west end of the Roman Catholic church was laid. This tower will form the western entrance, and will be surmounted by a spire. It will cost between £4,000 and £5,000, and is being built by Messrs. Parnell & Son, of Rugby.

S. George's, Bloomsbury.—The spire of S. George's, Bloomsbury, is now undergoing repairs. The figures at the base of the pyramid were so dilapidated as to endanger the limbs and lives of those whose business took them through the church-yard below. Is this another instance of the unsuitability of Bath stone in a London atmosphere?

BUILDINGS.

New Fever Hospital for Bolton.—At a special meeting of the Bolton Board of Guardians last week, plans for a new fever hospital, with ward for small-pox cases, were adopted. The plans have been prepared by Mr. George Woodhouse, architect, Bolton. The building, which will be erected near to the workhouse, at Farnworth, will accommodate 44 patients, and the cost is estimated at about £5,000.

Thelwall Schools, near Warrington.—These buildings which have now been commenced (the contract having been let to Messrs. John Collin & Son, of Warrington), will stand upon a portion of the Hall grounds, which has been given for the purpose by James Nicholson, Esq., of Thelwall Hall. The contract also includes the alteration of the present school, which, with additions, will become the school-house or residence for master. This building, together with the land it stands upon, and small garden, is the gift of Henry Stanton, Esq., of Thelwall. The whole will be carried out from the designs and under the superintendence of Mr. William Owen, architect, Warrington.

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New Sunday Schoolrooms, in connection wi Mr. Spurgeon's Tabernacle, are about to be erect at a cost of about £2,500.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK STREET, COVENT GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m on Thursday.

Received.—J. H., E. H., R. T. W., A. B., F. N., T. C., J. P. S., A. G. T., A. T. T., J. M.

Monumental.—Inadmissible as a query.

Tudor.—We can't say without seeing photo. and plan.

Hope Deferred.—We have been waiting for good sunlight.

G. T. C.—Your letter, though inoffensive enough, is irritating. You offer suggestions and give advice without the necessary ability to do either. You don't know what has appeared in the Building News, or you would not have advised us to give the competition designs for the New Law Courts. You don't know what is good architecture, or you would not recommend us to give meretricious illustrations in preference to unpretentious executed works, and you do not know the value of A. Durer's engravings, or you would not say they should have no place in an architectural journal. Every copy of the Building News, which contains a reproduced engraving of the great German master will, in years to come, fetch more than its published price. When you know more you will probably give less and better advice.

A Country Carpenter.—Thanks for the suggestion which had, however, been anticipated by us.

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Correspondence.

THE INSTITUTE AND ITS PRESIDENT.

To the Editor of the Building News.

Sir,—I have no intention to question your right as the editor of a professional paper to criticise as severely as you please any act of mine in the quasi-public position I have the honour to hold as President of the Institute of British Architects, but I do protest against the mis-statements you have made in your leading article of last week.

You call my recent action with reference to the Secretaryship of the Institute a *coup-d'etat* ; and you state that I promised in my opening address of last November that "further due notice should be given of my intention to propose a change."

I gave no such promise. You then add, "No such notice was vouchsafed either to the Council or the Institute until on Monday evening he disclosed his plot." I do not know what you may consider "due notice," but the usual fortnight's notice was given of my intention to bring this subject forward, and I stated at the meeting of the Council that I should do so. The members have since had another week to consider this matter, and with what result you have, no doubt, heard.

You subsequently state my proposition to be "that the present paid 'Assistant Secretary' should be raised to the office of Chief Secretary, to have the sole control and management, under the Council, of the affairs of the Institute." I made no such proposition. I never contemplated that the Assistant Secretary should be Chief Secretary, or that he should have anything but his own immediate home duties to attend to.

You say, "An Honorary Secretary is supposed to have some policy." I presume that the same privilege may be extended to the President of a society, without his being thought "ambitious," "insidious," or "over active."

You conclude by stating that *coups-d'etat* are usually "condoned if successful." As more than two to one of the members present on Monday evening, having had three weeks to consider my proposition, and having, no doubt, met in the "calmer spirit" you desired, have sanctioned my "insidious design," I trust I may be supposed not to have entertained it "without some forethought."

As you have published Professor Donaldson's letter to me, which was not accurate in all its statements, I must request you to publish my reply to it, even though somewhat late in the day.—I am, &c., Thos. Henry Wyatt.

Copy.

77, Great Russell-street,
Thursday Evening, March 9, 1871.

My Dear Donaldson,—

On my return to town this evening I find your official letter of yesterday, placing unreservedly "your resignation in my hands" (as President of the Institute), "and requesting that your name may be withdrawn from the list of Fellows." I can only say that I receive this communication with much regret and I may add much surprise, for although you may mistrust the policy of the change I have suggested in the administration of the Secretary's Department in the Institute, and might even be disinclined to continue your valuable services as Honorary Secretary for Foreign Correspondence, I cannot understand why you should feel impelled to withdraw your name as a Fellow, and it is as difficult for me to comprehend how you can suppose for one instant that any "humiliating subordination" for yourself was ever contemplated by me, or by those who share my views, in desiring to *concentrate responsibility* in the *home* work of the Institute.

You should not suppose that because we exercise conscientiously our judgment as the best means of adding to the efficiency and *life* of our Institute that we are forgetful or unmindful of what you truly describe as "most earnest services and unswerving duty during six-and-thirty years." I believe they are universally acknowledged, and I believe it would be very generally gratifying that you should continue to act as our Secretary for Foreign Correspondence, an office that may be held in *perfect independence* of the Secretary who takes charge of the *home* duties, and therefore in no way "subordinate" to him. Such an arrangement works most effectively in the Institution of Civil Engineers, with which I have had the honour of being connected for many years, and have seen its successful results. There the name of the Honorary Secretary takes precedence of the paid Secretary, as I had anticipated yours would do in our case. The duties and responsibilities are distinct, and as you so clearly put it the other night, the labours consequent on the duties of Honorary Secretary for Foreign Correspondence are, I am confident, as much as should in reason devolve on one who renders *honorary services.*

Let me correct an error into which you have fallen with regard to my proposition to the Institute. I never for an instant proposed "that the present Assistant Secretary should be raised to the office of *Chief Secretary*, and should have the *sole control* and management (under the Council) of the affairs of the Institute." I do, however, wish that Mr. Eastlake, who *now practically* has the labour oar of our Institute, who edits our Transactions, prepares our Minutes, and who carries on the bulk of the correspondence, should have the whole responsibility and credit of the work he does, and should be spared the unnecessary labour and waste of time in constant reference to the Honorary Sscretaries. I believe it will be for the interests of the Institute that the paid Secretary (and I know no one who could perform those duties more efficiently than Mr. Eastlake) should be independent of any other control than that of the Council, and feeling this strongly, I have thought it my duty to submit the question to the judgment of the whole body, even at the painful cost of appearing to differ from one for whom I have invariably had the greatest regard and respect. To the decision of the Members on this question I shall most cheerfully bow, and if your view should be upheld, will co-operate as cordially as ever under the existing "regime."

I remain, my dear Donaldson,
Yours very faithfully,
T. H. Wyatt, P.R.I.B.A.

T. L. Donaldson, Esq., &c., &c., &c.

LEICESTER MUNICIPAL BUILDINGS.

Sir,—You mention in your last that only twenty-seven designs have been sent in for the Birmingham Assize Courts. If I recollect rightly more than two hundred copies of the instructions were said to have been issued. If the Birmingham Corporation had been as wise (?) as their Leicester brethren, and had charged £1 for each copy of their instructions as a deposit, they might have realized by the forfeited pledges not only enough to cover the cost of printing and lithographing, but a sum sufficient to pay the second and third premiums as well. This, evidently, is the idea of the Leicester body. Whoever is simple enough to procure their instructions will no doubt find that *as the* £1 *deposits of the successful competitors are to merge into the premiums*, so the first premium (£200) is to merge into the commission. The others (£100 and £50) being already provided for in the manner I have suggested would, you may perceive, render the transaction a most inexpensive one to the promoters.—I am, &c., A. B. C.

BIRMINGHAM ASSIZE COURTS.

Sir,—If your Birmingham correspondent's surmise "that Classic will not be adopted" is based on a knowledge of the feeling of the Corporation, and of the existence of a foregone conclusion as to style, then competitors who may have prepared Classic designs will have much reason to complain, inasmuch as the Corporation, in their instructions, *pointedly* left the question of style an open one. If it is based merely on the fact that the architect "appointed to advise" is more particularly identified with the Gothic school, it seems not altogether complimentary to a gentleman who, under such circumstances, might be expected to take the broadest views.

The Corporation, I observe, do not bind themselves to adopt for execution any of the premiated designs. As they "reserve to themselves the right of ultimately deciding which set of plans shall be adopted," their feeling, if they have any, as regards style, should be the less allowed to influence the consideration of the adaptability and merits of the designs in the first instance.—I am, &c., Greek.

[We have no doubt that Mr. Waterhouse will be influenced in his adjudication by the "broadest views."—Ed.]

TIN-LINED PIPES.

Sir,—In your journal for February 3rd, a correspondent, referring to a paragraph quoted by you from the *Boston Journal of Chemistry*, remarks as follows :—

"It is a great pity that the paragraph has obtained currency in this country. I can only suppose it originated in malace, it being opposed to the plainest facts. Water does not corrode tin, nor is there any probability of galvanic action being set up."

The first mention of the subject in the *Journal of Chemistry* was in September, 1867, when the editor, Dr. J. R. Nichols, a chemist of large experience, said :—"After careful examination of this pipe, we hesitate to give it our approval. We fear it may prove more dangerous than pipes constructed wholly of lead." This attracted much attention, and persons interested in the manufacture of the pipe insinuated, as your correspondent has done, that it was malicious. In a longer article on the subject, published in July, 1868, Dr. Nichols says :—"At the time, we did not know the name of the inventor or manufacturer; and we neither entertained nor expressed a doubt of the entire integrity of purpose of those parties. . . . The impression prevails that pure tin pipe is practically indestructible when placed in the ground for conveying water. This is certainly an error. We have had a section of tin pipe in our possession which *was corroded through and through, and yet it had been in use only six months.* This occurred in the city of Manchester, New Hampshire." With regard to the tin-lined pipe, he gives the following facts :—"A physician recently brought to us a section of tin-lined lead pipe, taken from the well of a patient suffering from lead poison, which perfectly illustrates the position here taken. In putting the pipe in place, it had been bent at right angles at a point near the water, and the plumber, in attaching the pump above, had allowed a portion of solder to drop through the pipe, lodging directly at the bend. *Speedy corrosion commenced at this point*, promoted by galvanic action. *The lining was perforated, and lead poisoning of a marked character resulted.*"

Of the fact of corrosion in these cases there can be no doubt, whether Dr. Nichols is right or wrong in asserting that the corrosion was "promoted by galvanic action." Recent experiments appear to show that the galvanic action in the case of lead and tin is very slight ; and, if so, it cannot materially accelerate the corrosive process. The important fact, however, is that *corrosion may take place.* Instances of the kind may be rare, but it is clear that they *do occur.* We do not understand that the makers of this pipe deny this. They tell us that some of the pipe first put into the market was imperfectly made, and the like. They admit, moreover, that when the pipes are joined in the ordinary way by soldering, a portion of the tin lining is fused and the lead laid bare for some *four inches* of its length. They claim that this exposed surface of lead will not corrode more rapidly than the same length of ordinary lead pipe ; but in the case of waters that act readily upon lead we do not wish to have even a small surface of that metal exposed to such action. The makers of the pipe have themselves seen the force of this objection, and have now devised a means of connecting the pipes by screw joints, without solder. This is unquestionably an improvement, but whether it renders the pipe *perfectly* safe *in all cases* is by no means certain. The subject is still under discussion in this country, and the *Journal of Chemistry* will probably have something more to say about it.

W. J. Rolfe, Associate Editor of
Journal of Chemistry.

Boston, U.S,, Feb. 21.

SUNLIGHTS.

Sir,—Having used the sunlight for the combined purpose of lighting and ventilating in a large number of public buildings, I think I can supplement the information in your article by the result of my experience.

The first I used was at Bromley Town-hall, in 1865. I saw Messrs. Strode on the matter, and they recommended their mercurial regulator for the prevention of down draughts in the flue of the sunlight when not in use. I determined, however, upon a simpler expedient of my own invention, viz., to attach two plates of mica to the inner sides of the square vertical flue, or upcast shaft, to fall inwards and close on to a central bar at an angle of about 45°. The mica is so light that the least upward movement in the column of air raises the valves, and they are prevented opening more than 35° by a stop, otherwise they might have become set open. When the light is not in use they fall close of themselves, and any downward current keeps them tight; immediately the burners are lighted the ascending current of warm air opens the valves and readily escapes. I finished the top of the flue with one of Benham's wind guards.

The late Mr. Boyle was one day at my office, and speaking of the mica valves, he said I was infringing his patent, which consists in the use of mica dampers to chimney breast ventilators. We settled our difficulty by my paying him a royalty of 2s. 6d.

As Surveyor of Police, I had occasion to deal with the defective state of the ventilation of the Police-court in Great Marlborough-street, and I determined upon a sunlight. In this case I finished the top of the upcast shaft pyramidally, placing the mica dampers on the outside, like a series of Boyle's chimney-breast valves; at the same time I made improvements in the construction and means of fixing of the upcast shaft and wind-guard, so as to increase its ventilating powers. The sunlight is in daily use at Marlborough-street, and Mr. Knox, the magistrate, can speak of its efficacy, though from motives of economy, I did not enlarge the fresh air supply to the extent I considered desirable. The sunlight was manufactured and fixed complete by Mr. Freeman, of Vine-street, Piccadilly, the talc cone used being Strode's patent.

These improved sunlights have subsequently been fixed at several other police courts with equal results.

The defective state of ventilation in the county courts at Bloomsbury and Westminster was referred to me as Surveyor to the Treasury for County Courts. The arrangement in use provided for bringing in warmed air through large grated holes in the walls about 10ft. above the floor, and an inefficient appliance for withdrawing the fouled air at the floor level. The result was a superheated state of the upper portion of the court, and a very foul state of the general atmosphere, with attendant headachs and cold feet for all those who had to remain long in the court. I closed the inlets of warm air at the high level and diverted an increased supply of fresh warmed air (availing myself of the old heating medium) and distributed it by inlet gratings at numerous points just above the floor level, so as to create a general movement of the lower stratum of air; I placed an improved sunlight—as at Marlborough-street—with great extracting power, in the lantern light; this is not lighted until the court is warmed, it then gives a gentle upward movement to the whole atmosphere, and even on the most crowded days is found perfectly successful.

The usher, standing near the bench, can control to a nicety the supply of fresh air and the velocity of the out-going current in the sun-burner.

The same principle has subsequently been introduced, under my direction, in several more of the metropolitan courts, and in numerous county courts and other buildings throughout this country; the sun-lights being manufactured and fixed in all cases by Mr. Freeman.

I may add that the enamelled metal basins frequently seen are very dangerous and unsatisfactory; their shape is such that they condense and throw down the heat on to the heads of those below to an incredible degree; the enamel frequently flies by the action of the heat; it soon gets discoloured and black; and from the opacity of the cone, throws the whole ceiling into shade. The patent cone of Strode's manufacture, which I always use, is entirely free from all these defects.

I am, &c.,
Thomas Charles Sorby.

27, Brunswick-square, W.C., March 14, 1871.

Intercommunication.

QUESTIONS.

[2160] CIVIL ENGINEERS.—Will some of my fellow readers of the Building News kindly inform me of a few particulars respecting the Institute of Civil Engineers? 1st. What benefit does it confer on its members, especially on those 300 miles from London? 2nd. Is there any branch establishment in the North of England, or would it be difficult to form a branch establishment at a place like Carlisle? 3rd. What are the terms, and is there any examination to pass? What is really the qualification of a civil engineer? The address of the secretary, and other information thankfully received by—Rusticus.

[2161] TIMBER.—Will any of your readers kindly inform me if deals from Gefle, Gothenburg, or Soderhamn are as strong and as durable for carpenters' work as what is termed best Baltic timber in specifications?—Would do Right.

[2162] ORIGINAL DESIGN OF ST. PAULS.—Could any of your readers inform me where a plan of this building is to be found?—F. L. P.

[2163] WATER CLOSETS.—Can any of your subscribers inform me from practical experience what class of water closets prove the most desirable as regards sanitary arrangements, simplicity, and durability for a large school, where constant use and rough usage are the average treatment? There would be required between six and twelve, all contiguous to one another, and clear of the main building.—An Old Subscriber.

[2164] CONSERVATIVE LAND AND BUILDING SOCIETY.—Required; the result of the recent appeal for a surveyor and assistant auctioneer to the above-mentioned.—S.

[2165] ARCHITECTURAL TRAVELLING SCHOLARSHIPS.—Where can I obtain information about the various architectural scholarships competed for in London? J. W. Woodsend.

REPLIES.

[2136] SOLE CONTRACTS.—I am sorry the task of defending the principle of sole contracts has devolved upon me, but really after reading the letter of "Surveyor" in last week's issue I felt called upon to contradict his untruthful assertions. I will therefore proceed to deal with his remarks in the order he gives them. First, he says "that the sole contractor would relet the whole of the different branches, excepting his own, which would probably be that of a carpenter and joiner, which is quite likely. Secondly, "That the sole contractor would add 5 per cent. to the several sums for his trouble," which is not done, as the sole contractor is satisfied with his profit on his own work in all cases. Thirdly, "That probably the sub-contractors would insure themselves against risk of failure or otherwise of the sole contractor by putting on high prices," which is perfectly right on their part; but I wish to ask "Surveyor" if it never struck him that there is as much likelihood of the proprietor becoming bankrupt as the sole contractor; and likewise, has it never occurred to him that should the sub-contractors furnish the proprietor with tenders for their different branches they would not only put as high, and perhaps higher, prices than the sole contractor, but would also add 5 per cent. In conclusion, I must say, from the tone of "Surveyor's" letter, he is very little acquainted with the trade or the rules of respectable builders, and finally advise him to read Mr. Bermingham's paper in last week's Building News, from which he may learn a good deal.—X.

[2136] SOLE CONTRACTS.—In re sole contracts *v* fragmentary contracts, perhaps the following quotation of parallel tendering under both methods will tend to confirm my opinion expressed last week, convince "Subscriber," and convert both "Surveyor" and "Richt Wrangs Naebody."

Case No. 1.

Sole tender	£2300	
Fragments:		
Bricklayer	£581	0
Mason	372	0
Carpenter & joiner	693	0
Smith & ironmongers	70	0
Slater	93	0
Plumber, glazier, &c.	247	0
Plasterer, painter, &c.	222	0
Tiler	33	0
Bellhanger	8	14
Cohesion	£2319	14

Case No. 2.

Sole Tender	£618		
Fragments:			
Bricklayer	£169	2	6
Mason	148	0	0
Carpenter & joiner	260	0	0
Smith & ironmouger	59	9	1
Slater	45	0	0
Plumber & glazier	36	0	0
Plasterer & painter	31	0	0
Cohesion	£758	11	7

Case No. 3 and last.

Sole tender	£132	
Fragments:		
Bricklayer	£41	0
Mason	66	0
Carpenter, joiner, &c.	54	17
Painter	4	0
Cohesion	£165	17

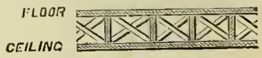
—F.

[2141] HOUR GLASS.—"Time" asks respecting a fifteenth century hour glass. I saw at the church of S. Michael's at Verulum, near S. Alban's Abbey, the iron frame work of the hour glass stand fixed by the side of a splendid old pulpit, which, thank God, has been allowed to remain, although so many are removed by the church-restorers of the day. I am sorry I did not enquire respecting the glass, but if he lives near it is worth his seeing, and perhaps what he requires may be there also.—William Pitman, 30, Newgate-street, London.

[2142] COMMUNICATION WITH GARDENER'S HOUSE.—Your correspondent "Camjee Wadjee" will find the electric bells much the best means of communication in the case he states. No cranks are required, and the wires can be laid underground, or anywhere, so the shrubs and roads he mentions will not in any way affect their successful working. I believe he will also find this much more economical than any other method.—Surveyor.

[2143] SEWER AUTHORITY.—Consult the Solicitor-General or other equally "big wig."—F.

[2147] HERRING-BONE BRIDGING.—It would pay "Ixion" to quit the wheel and walk between decks a bit, both before and after planking. Cross pieces firmly nailed between joists to insure rigidity thus:



are yclept herring-bone bridging.—F.

[2150] SURVEYING DILAPIDATIONS.—I have not found any writer on the subject of dilapidations attempt to define the exact limits of chancel, nave, or chapel. The general feeling appears to be that there is a mutual obligation as regards the repair of division walls, so that whether it is chancel, nave, or chapel being restored, the parties make good all the surrounding walls without reference to the exact limit of legal responsibility. I should be disposed to contend that the so-called chancel-arch belongs to the nave, as the wall in which it is situated rises higher than the chancel, stops the nave roof, and so marks it as belonging to and part of the nave. The walls at sides of chancel and the arches in them I should say belonged to the chancel. They usually rise higher than the chapels, which are in every way subsidiary buildings, and in most cases were added after the chancel was built. As the fences are liable to be assessed for dilapidations they must, of course be surveyed.—P. E. M.

[2151] PRESERVING PENCIL DRAWINGS.—Milk and water, or a weak solution of gum-arabic, applied by the medium of a camel's-hair brush of somewhat extensive dimensions.—F.

[2151] PRESERVING PENCIL DRAWINGS.—"W. W. D." will very effectually preserve his lead pencil drawings by washing them carefully and lightly over wit pure sweet milk.—J. M. A.

[2151] PRESERVING PENCIL DRAWINGS.—There are three different means in general use for fixing pencil drawings: by hot water, by milk and water (the milk being perfectly free from cream), and by a weak solution of isinglass. The liquid is applied either by using a broad flat camel-hair brush gently passed over the drawing, or, which is better still, placing the liquid in an open, shallow vessel, and passing the drawing through it. But the advantage of setting the drawing is doubtful; it always impairs the brightness and purity.—P. E. M.

[2152] VANISHING POINT.—I think all the information C. A. Priestly requires is "all lines at right angles to the picture plane vanish in the centre of vision." C. A. Priestly had better attend an art school class, where he will be taught perspective properly.—Assistant Art Master.

[2152] VANISHING-POINT.—The position of the vanishing-point varies with the particular requirements. The most usual practice is to put it about 5ft. 6in. high from floor level, and a little out of centre of drawing, just sufficient to give variety to the lateral features.—P. E. M.

[2154] ISOMETRICAL DRAWING.—"Pulpit" and some others ask very simple questions. He should enquire of the booksellers. I would, however, say it is not a subject worth spending money upon. Isometrical perspective is not perspective at all, but only a clumsy imitation of it. If the editor of the Building News pleases, will send a diagram and explanation for publication. Th thing is learnt in two minutes.—P. E. M.

[2156] OLD AND NEW BRICKWORK.—Take out brick, or portion thereof, at intervals from the existin work, and firmly "pin in" a portion of the new brickwork corresponding in substance.—F.

[2158] LARGEST STONE DOME.—The largest is tha of the Pantheon, at Rome. The inside diameter, 142 8½in.—P. E. M.

[2159] ANCIENT STONE SPIRES.—Nine inch m be considered a fair approximate thickness.—P. E. M.

WAGES MOVEMENT.

The Carpet Manufacturers' Association of the North of England has resolved to grant an increase of 10 per cent. on the wages of their workmen.

The whole of the men at Messrs. Hawthorn's engine works, Newcastle-on-Tyne, numbering over a thousand, turned out on Tuesday week in consequence of the masters refusing to pay wages every week instead of every fortnight as at present. The subject of wages has been agitated amongst all classes of workmen in the north for a considerable time past, and hence this first real move to make masters yield the desired point is not unlikely to be followed by some serious consequences.

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LEGAL INTELLIGENCE.

COURT OF BANKRUPTCY, MARCH 3.—(Before Mr. Registrar Roche).—Re Brian Edwin Amery.—This was a first sitting of creditors. The bankrupt was described as of London-lane, Mare-street, Hackney, builder, and was adjudicated on the 10th of February, upon the petition of Messrs. Lee & Chapman, of 72, King William-street, City, timber merchants.—Mr. F. Lamb, appeared for the petitioning creditors, and Mr. Treherne (Treherne & Wolferstan), represented a number of creditors.—The statement of accounts produced by the bankrupt disclosed total unsecured debts about £1,000, and creditors holding security about £2,400, against assets about £750. Proofs having been admitted amounting to about £850, the creditors chose Mr. W. H. Pannell, public accountant, to be the trustee of the bankrupts estate and effects, and Messrs. Treherne and Wolferstan were appointed the solicitors to to the future proceedings. The court fixed the 19th of April next, at 11 o'clock, for the public examination of the bankrupt, before the Chief Judge, at Lincoln's Inn Fields.

BUILDERS' QUARRELS.—T. AND R. COSFORD V. GENT.—This was an action for libel, tried at Northampton on Wednesday, under the following circumstances: The plaintiffs, who are builders and contractors at Northampton, contracted to make a street for the Town Commissioners, though the expense had to be borne by the respective householders living in the street. The defendant, who is also a builder at Northampton, refused to pay his moiety of the expense of making this street, and, when pressed for payment, wrote a letter to the newspaper, charging Messrs. Cosford with having "scamped the work." The Messrs. Cosford thereupon called upon the defendant to withdraw this imputation upon their character, and the defendant declining to do so this action was brought. The defendant pleaded justification, but after the case had proceeded for a short time an apology was made by Mr. Bulwer on defendant's behalf, and a verdict was taken for the plaintiff for ten guineas, to carry costs.

THE PAVING AND FLAGGING OF STREETS.—At the Leeds County-court, last week, a case was heard before Mr. T. H. Marshall, the judge, of some interest to owners of property. Mr. George Graham, of Alfred-place, Leeds, sued Messrs. Abbey & Simpson, contractors, to recover a sum of £5, the value of some flags and kerbstones which the defendants detained belonging to him. In October last, the defendants contracted with the Corporation to pave and flag certain streets in Quarry-hill, and the plaintiff was the owner of property in one of the streets. At that time his property was flagged and kerbed, but he received a notice from the borough surveyor that he must forthwith remove the flags and kerbs, or the contractors would take them away as so much rubbish, and accordingly the defendants, who were the contractors, did remove them, and afterwards refused to give them up or pay the plaintiff the value thereof. Mr. William Emsley appeared for the plaintiff, and submitted that, even if it were admitted that the defendants had a right to remove the old flags and kerbstones, they had clearly no right to convert them to their own use without paying to the plaintiff their value; and, in any event, the utmost his client could be liable to pay would be the cost of removal. If it were otherwise, the contractors might remove all the flags and kerbs in the streets which were about to be paved and flagged and convert them to their own use.—Mr. A. C. Granger, who appeared for the defendants, stated that the Corporation had given notice of their proceedings, and it was the plaintiff's own fault if he did not remove the stones; and not having done so, the contractors received instructions to effect the removal, and this was the course adopted with respect to the reflagging and repaving of all streets.—His Honour was of opinion that the defendants had a right to remove the stones, if the plaintiff refused to do so, but that clearly could give the defendants no right to say that after removal the plaintiff had lost his property in the flags. The defendants must give up the property removed forthwith, or pay the amount claimed.

SALE OF A BRICKFIELD.—ALLEGED FRAUD AND PERJURY.—Recently the Justices of the Peace acting in and for the division of Faversham, Kent, after an investigation at the Sittingbourne Police-station, which extended over three days, committed the Rev. W. English, vicar of Emmanuel Church, Camberwell, to take his trial at the next assizes to be held at Maidstone, on various charges of perjury and suborning others to commit perjury. The proceedings were taken by Mr. Peter Bawden, a brickmaker and patentee of brick-making machines, residing at Norland-square, Notting-hill. From his evidence it appeared that in 1868, in consequence of seeing an advertisement that a certain brickfield in the neighbourhood of Rainham was for sale or hire, he went down to that place and saw the defendant. He visited the brickfield in company with the defendant, who represented that it contained earth capable of making the best bricks in the neighbourhood. From the representations made by the defendant he was induced to hire the field, one clause in the agreement being that he should pay a royalty for 4,000,000 bricks every year. It was declared by several witnesses that the earth in this field was not capable of making marketable bricks. A clamp of bricks was standing in the field at the time in question, which defendant alleged had been made from the earth of that particular field, whereas it was proved that many of the bricks, which were placed outside the clamp, and were of a far superior quality to those in the interior, were made from earth specially carted for the purpose from another field. Mr. Bawden consequently sued the defendant for obtaining from him a valuable security by fraudulent pretences in respect of this field, and the action was tried at the Maidstone Spring Assizes in 1870. Defendant was then examined as a witness, and in consequence of his having, as was alleged, sworn falsely at that trial, he obtained the verdict. Subsequently a rule *nisi* was applied for in the Court of Queen's Bench for a new trial; the arguments were heard before the Lord Chief Justice, who refused to grant the application. The present proceedings were then taken, and a mass of evidence was given tending to show that the vicar of Emmanuel had not only sworn falsely at the trial, but had suborned others to follow his example. On this evidence the defendant has been committed for trial, as before stated.

A BUILDERS' DISPUTE.—EXTRAORDINARY VERDICT OF A JURY.—WALKER V. GODFREY AND STORER.—The plaintiff in this action, a builder, carrying on business in Richmond-street, Leicester-square, sued the defendants in the Westminster County-Court to recover the sum of £18, the alleged balance of an account for work done. Mr. H. T. Roberts, of Clement's Inn, appeared for the plaintiff, while the defendants were represented by Mr. Cooke. Mr. Roberts opened the case by stating that the sum of £18 was in reality only £8, out of which £2 6s. had been paid into court as satisfaction. The plaintiff stated that in October last he was engaged to do work for the defendant amounting to £22, and had applied for £5 on account to pay wages, but never agreed to take £8 in full discharge of his account. In cross-examination by Mr. Cooke, he acknowledged having brought three actions against customers in which he was unsuccessful, and that he had a case now pending in the Marlborough-street Police-court. He had received £4 on account, and had taken away some old material for which he had not given credit. The gas-fittings, for which he charged £2 1s. 6d., were reasonable. Mr. Rayner called, and stated that the charges were fair and reasonable, and Mr. Tidman, a builder and decorator, of Jermyn-street, considered the work done worth £14 16s. For the defence, it was urged that £8 was the sum agreed upon, and that when applied to for payment on account, the defendants demanded a statement of account, which the plaintiff said he had no time to make out. A cheque was at length given for £10 to change and keep £4 for himself on account, and this sum, with that paid into court, and the materials taken away, would satisfy the claim. Mr. Storer, one of the defendants, remembered the work done, and saw it partly executed; the plaintiff was to do it very cheaply. The gas-fittings were so badly fitted that an explosion took place on the premises. Mr. Leggat, a builder of forty years' experience, stated that the work was the worst executed he ever saw; and Mr. Weymouth, architect and surveyor, considered the work was badly done, and worth at the most £10. Mr. Holling, gas-fitter, was called to prove that the gas-fittings charged at £2 1s. 6d. would be dear at 30s. At this stage of the case, Mr. Roberts stated that after the amount of evidence for the defence he would not insult the jury by addressing them. His Honour also considered he need not read the evidence over to them, which, however, they requested might be done; after which they retired for nearly one hour, and, much to the astonishment of all in court, returned a verdict for the plaintiff of £15, without costs; upon hearing which Mr. Roberts at once applied for a new trial, on the ground that the verdict was against the weight of evidence. His Honour at once granted the request, and fixed the 22nd inst. as the day of trial.

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Our Office Table.

INDIAN ARCHÆOLOGY.—Mr. Grant Duff has officially told the public what are the intentions of the Indian Government for the preservation of the architectural remains under its charge. In his Indian speech he said that "some want of organisation having been observable in the efforts to preserve and to describe the architectural treasures of India which were set on foot in 1867, we have lately sent out, at the request of the Government of India, one of the most distinguished of Asiatic archæologists, General Cunningham, to give to the Archæological Survey that definiteness of aim and regularity of proceedure which seemed to be wanting: and a cognate duty with regard to the preparation of a complete Gazetteer of India has been entrusted to Dr. Hunter, whose book on the annals of rural Bengal attracted so much and such deserved attention two or three years ago." The work was begun, not in 1867, but under Lord Elgin, and stopped by his successor, Lord Lawrence, who with the aid of Mr. Massey, outvoted the other two members of Council. General Cunningham then returned to England. Lord Mayo has now put the work on a satisfactory footing, and appointed the most able of Indian archæologists to superintend it, with a salary of £2,500 a year.

ASSOCIATION OF ENGINEERS IN GLASGOW.—At the last monthly meeting of this association—the President, Mr. James S. Dickson, in the chair—Mr. Charles H. Reynolds, jun., read a most elaborate and carefully-prepared paper on "The Arrangement of the Fastenings of Iron Structures." The author confined himself more particularly to the functions of iron plates and rivets, individually and collectively, in malleable iron structures subject to local straining and varying conditions of equilibrium, taking for example an iron-built ship as being about the best instance of one structure being subject to severe alterations of repose and distress, and irregularly-recurring periods of compression, tension, and shearing.

PROPOSED HARBOUR AT BUENOS AYRES.—Advices from Buenos Ayres by the last mail state that the report of Mr. Bateman, C.E., on the project for a harbour at Buenos Ayres was a leading subject of attention. It includes the formation of several tidal docks, with accommodation for 1,500,000 tons per annum, equal to the trade of Glasgow—a provision considered necessary, since the commerce of Buenos Ayres doubles every eight-and-a-half years, and is already equal to half that of Glasgow. The total cost of the proposed works is estimated at £2,500,000.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY.—*Royal Institute of British Architects.*—"On the Construction of Theatres." By Mr. E. Salomons, Fellow. 8 p.m.

Society of Engineers.—Discussion on Mr. Thomas Wilkins's paper "On the Machinery and Utensils of a Brewery." 7.30 p.m.

TUESDAY.—*Institution of Civil Engineers.*—(1) "Description of a Wrought-iron Pier at Cleveden, Somerset." By Mr. J. W. Grover, M.I.C.E. (2) "Description of Viaducts across the Estuaries on the Line of the Cambrian Railways." By Mr. Henry Conybeare, M.I.C.E, 8 p.m.

WEDNESDAY.—*Society of Arts.*—"On Drill, the Complement of the Present School Teaching." By Major-General Eardley-Wilmot, R.A. 8 p.m.

THURSDAY.—*Society for the Encouragement of the Fine Arts.*—"Hobgoblins in Poetry and Art; or the Beauty of Truth." By Mr. Wyks Bayliss, F.S.A. 8 p.m.

FRIDAY.—*Architectural Association.*—"Ironwork of the Middle Ages." By C. Baily, Esq. 7.30 p.m.

SATURDAY.—*Museum of Practical Geology, Jermyn-street, S. James's.* — Swiney Lectures on Geology. Lecture III. By Dr. Cobbold, F.R.S, 8 p.m.

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Chips.

Mr. Hyde Clarke's paper "On the Primitive History of Language and Art in Asia and the West" will be brought before the Anthropological Institute on Monday next. It lays down the basis for a new history of the progress of art in the beginning of civilization.

Mr. James Rankin, of Bryngwyn-park, Herefordshire, has offered to build at his own expense a free library and scientific museum for the city of Hereford, on condition that the former be maintained by a borough rate.

It is proposed to erect new swimming baths near the Elephant and Castle, Newington. An offer by the proprietors to fit up wash-houses for the accommodation of sixty persons, upon the Vestry of Newington taking a lease of the wash-houses for twenty-one years, at a rent of £700 per annum, has, however, been declined by the Vestry.

The new Fever Hospital at Stockwell was opened for the reception of patients on Monday last.

The roadway in Newington Butts (from S. Mary's Church to Penton-place) has just been re-surfaced with broken granite and rolled with one of Aveling & Porter's 15-ton steam rollers.

At a late meeting of the Newington Vestry, previous resolution, ordering that Baker-street, White Hart Court, Nile-place, and Union-court be paved with York paving was rescinded, and it was ordered that Wright's tar asphalte paving be used instead. The cost of the latter was stated to be 2s. 6d. per yard, while the York paving was 5s.

The Metropolitan Asylums Board having proposed to erect a temporary small pox hospital just outside the fence of Battersea Park, the inhabitants of the dictrict are organizing a stong opposition to the scheme.

In the progress of some excavations at the Taunton Union Workhouse, a few days ago, an old tobacco-pipe was dug up, on which was inscribed "John Hunt, 1561." It is in an excellent state of preservation, and is stated to be the oldest specimen of a pipe known to be in existence.

The memorial stone of a new wing to the Congregational School, Lewisham, for the education of the sons of ministers, was laid on Tuesday last. The estimated cost of the building is £3,000.

The Porte has authorised the municipality of Constantinople to contract a loan for the execution of urgent public works in that city.

It has been resolved by the parishioners of S. Margaret, Ipswich, to erect a third church in that neighbourhood. The site has been given.

The Shoreditch Vestry has resolved to set apart £500 every quarter for the purpose of flagging and repairing the footpaths of the parish, of which there are now about 100 miles.

The foundation stone of a new Roman Catholic Cathedral has been laid at Armidale, Australia.

New Radford Church, near Nottingham, has been reopened, after renovation by Mr. J. H. Lee, ecclesiastical artist, of Lutterworth. A stained glass window has been inserted at the east end. The total cost has been about £200.

The Lords Commissioners of the Admiralty have conforred the appointment of Inspectsr of Coastguard Buildings in Great Britain on Mr. Charles Henry Perkins, late of Devonport, and brother to Mr. George Perkins, surveyor to the Right Hon. the Earl of Mount Edgcumbe.

Timber Trade Review.

Prices March 14.—Per Petersburg standard.—Quebec yellow pine, best bright, 19*l* 10*s*; 2nd floated, 12*l*; 2nd dry 12*l* 10*s*; 3rd floated 9*l* 10*s*; Petersburg 1st white, 9*l* 5*s*; Kramfers mixed white, 7*l* to 7*l* 5*s*; do 3rd white, 6*l* 15*s*; Kuugsgarden mixed yellow, 9*l* 10*s*; do 3rd yellow, 8*l* 5*s*; Fredrickstadt 1st yellow, 8*l*; do 2nd yellow, 7*l* 10*s* to 8*l*; do 3rd yellow, 6*l* 15*s* to 7*l*; Holmstrand 1st yellow, 6*l* 12*s* 6*d*; do 1st white, 5*l* 17*s* 6*d*; Gothenburg 4th wbite, 6*l*; Husum 3rd yellow, 7*l* 15*s* to 9*l*; Hernosand mixed yellow, 8*l* to 8*l* 15*s*; do 3rd yellow, 8*l* 5*s* to 8*l* 10*s*; do 4th yellow, 8*l* to 8*l* 5*s*; Drain 2nd yellow, 6*l* 12*s* 6*d* to 7*l* 2*s* 6*d*; do 3rd yellow, 6*l* 7*s* 6*d*; Gefle 4th yellow, 7*l* 10*s* to 8*l* 10*s*; Uleaborg 1st yellow, 6*l* 15*s* to 8*l*; Wyburg 1st yellow, 9*l* to 9*l* 15*s*; Sandvik 3rd yellow, 8*l* 5*s*; do mixed white, 8*l* 5*s*; Urnea 3rd yellow, 8*l*.

Per 120 12ft. 3 by 9.—Halifax unsorted spruce, 13*l* 10*s* to 13*l* 15*s*; do 3rd spruce, 12*l* 10*s*; Quebec 1st spruce, 18*l* 5*s*; do 2nd spruce, 15*l* 15*s* to 16*l*; do 3rd spruce, 12*l* 5*s* to 13*l* 10*s*; St. John's unsorted spruce, 14*l*.

Per 120 12ft. 2½ by 6½.—Christiana 2nd white, 6*l* 15*s*; do 3rd white, 6*l*.

Fredrickstadt best yellow flooring.—1¼in., 13*s* 6*d*; 1in., 8*s* 9*d* to 10*s* 6*d*; ⅞in., 8*s* 3*d*; ¾in., 7*s* 6*d*.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

Metals.

Lead:—

Pig Foreign	per ton	£17 10 0	£17 12 6
,, English W.B.	do	19 10 0	19 12 6
,, Lead Co.	do	18 12 6	18 15 0
,, Other brands	do	18 5 0	18 17 6
Sheet Milled	do	18 10 0	19 0 0
Shot, Patent	do	20 10 0	21 0 0
Red or Minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry	do	27 0 0	0 0 0
,, ground in oil	do	0 0 0	0 0 0

Copper:—

British—Cake and Ingot	per ton	£73 0 0	74 0 0
Best Selected	do	74 0 0	76 0 0
Sheet	do	75 10 0	79 0 0
Bottoms	do	79 10 0	81 0 0
Australian	do	72 0 0	75 0 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars, cash	do	64 10 0	66 0 0
,, Refined ingot	do	71 0 0	73 0 0
Yellow Metal	per lb	0 0 6½	0 0 7½

Iron:—

Pig in Scotland, cash	per ton	£3 13 6	0 0 0
Welsh Bar, in London	do	7 0 0	7 10 0
,, Wales	do	6 7 6	6 12 6
Staffordshire	do	7 15 0	8 5 0
Rail, in Wales	do	6 7 6	6 10 0
Sheets, single in London	do	9 5 0	10 5 0
Hoops, first quality	do	8 15 0	9 5 0
Nail Rod	do	7 7 6	7 15 0
Swedish	do	9 15 0	10 0 0

Timber.

Teak load	£12 10	13 0
Quebec, red pine	3 15	4 15
,, yellow pine	4 5	5 5
St. John N.B. yellow	0 0	0 0
Quebec Oak, white	6 0	6 5
,, birch	3 15	5 0
,, elm	4 0	4 10
Dantzic oak	5 5	6 10
,, fir	2 10	4 10
Memel fir	3 0	4 0
Riga	3 5	3 10
Swedish	2 5	2 15
Masts, Quebec red pine	4 0	6 5
,, yellow pine	4 0	6 5
Lathwood, Dantzic, fm	3 0	5 0
,, St. Petersburg	5 0	5 10
Deals, pr C., 12 ft. by 3 by 9 in.,		
Quebec, white spruce	12 0	17 10
St. John, white spruce	12 10	14 0
Yellow pine, per reduced C.		
Canada, 1st quality	18 0	19 10
2nd do	12 15	13 10
Archangel, yellow	11 10	14 10
St. Petersburg, yel.	13 10	13 10

Finland	£7 0	£8 0
Memel	0 0	0 0
Gothenburg, yellow	8 10	10 10
,, white	8 10	9 10
Gefle, yellow	10 10	12 10
Soderham	8 10	12 0
Christiania, per C., 12 ft. by 3 by 9 in. yellow	10 0	12 10
Flooring boards, per sq. of 1in., first yel	s. d. 7 6	s. d. 10 6
First white	7 0	9 6
Second qualities	6 0	7 0
Pumice Stone pr ton	6 0	8 0
Oils, &c.		
Seal, pale per ton	£37 10	0 0
Sperm body	84 0	0 0
Cod	35 10	0 0
Whale, Sth. Sea, pale	36 0	37 0
Olive, Gallipoli	49 0	0 0
Cocoanut, Cochin, ton	45 0	48 10
Palm, fine	38 0	38 10
Linseed	33 0	0 0
Rapeseed, Eng. pale	47 0	0 0
Cottonseed	28 10	34 0

Trade News.

TENDERS.

City.—For building warehouse, 23, Bevis Marks, St. Mary Axe. Mr. H. H. Collins, architect. Quantities supplied :—

Henshaw	£1430
Richardson	1235
Cohen	1200
Newman & Mann	1145
Merritt & Ashby	1129
David King & Sons	1115

Greenwich.—For decorative works at Greenwich. Mr. H. H. Collins, architect :—

Paine	£335 17
Wretton	315 0
Cohen	192 0
Cox	169 0

Guisborough.—For new cemetery, Guisborough, Yorkshire, Mr. R. G. Smith, architect, Hull. Quantities supplied by Mr. G. W. Ranwell, 3, Westminster Chambers, Victoria-street, London, S.W. :

For the whole of the works.

McCormick	£4780 0 0
Radgo & Harrison	4457 19 3
*Rennard	4300 12 0
Brumley	4297 0 0
France	4130 0 0
Dodgson	4059 1 0
Brown	3699 0 0

For two chapels, dead house, and out offices.

Lord	£3000 19 7
Wilkinson	2445 0 0

For laying out and draining the site and building fence walls.

*Young	£1768 19 6

For laying out and draining the site.

Hudson	£962 0 0
Eaton	900 0 0
Nicholson	750 5 9

Part tenders.

Wandless, slating	£184 18 0
Dauber for ditto	180 0 0
Atkinson & Son for ditto	173 17 4
Wharton, for ditto	168 7 6
Ormerod, for plastering	45 0 0

* The tender of Mr. J. Rennard for £2327 17s. was accepted for building the two chapels, mortuary chapel, lodge and offices, and that of Mr. Young, of Sunderland for laying out the site, draining ditto, and building fence walls.

Hereford.—For new shop for Messrs. King, drapers. Mr. T. Davies, architect :—

Bigglestone	£2550
Coleman & Son	2500
King & Godwin	2394
Gough	2370
Brown	2250
Welsh & Son (accepted)	2194

Mile End.—For erecting new schools, Church street, Mile End New Town. Mr. T. C. Clarke, architect. Quantities supplied by Mr. M. W. King :—

Axford & Whillier	£2275
Turner & Son	2197
Brass	2188
Coleman	2160
Collis & Son	2158
Ashby & Son	2137
Myers	2095
Pritchard	2017
Hensbaw	2050
Ennor	2036
Scrivenor & White	1972
Hill, Keddell, & Waldram (accepted)	1929

New Radford, Notts.—For a Detached Infirmary to the above Union, to be completed in four months :—

James Wright & Son	£2000
J. & S. Oldershaw	2100
J. Priestley	1795
Stevenson & Weston	1825
J. Clarke	1705

Nottingham. — For extending lace dressing rooms, Queens-road, Nottingbam, for Messrs. C. Cox & Co. Mr. R. Berridge, architect. Quantities supplied by Messrs. Hovenden & Heath :—

Hare	£8500 0
Hill, Keddell, & Waldram	8423 0
Tynam	8307 10
Dennett & Co. (accepted)	8205 0
Architects' Estimate	8250 0

St. John's Wood.—For decorative works at S. John's Wood. Mr. H. H. Collins architect :—

Bockbinder	£2235
Mellier	1490
Gillows	1395
Hensbaw (accepted)	1380
Clarke & Mannooch	987
Galli	970

Wandsworth.—For villa East-hill, Wandsworth, including small conservatory. Mr. James Newman, architect :—

Spearing & Stewart	£1021 5
Rhodes & Roberts	900 10
Tyerman	873 10
Nias	858 0
Blackburn	850 10
Kent	837 0
Spicer	835 0
Aries	816 0
Reavell	810 0
Gooding	805 10
Grover	803 0
Williams	781 0
Capps & Ritso	780 0
Nightingale	779 0
Collins	777 0
Hurst	772 10
Atkinson	770 0
Gough & Lawton	762 10
Hearn	753 0
Stevenson	684 0
Peskett & Taylor	656 0

Worcester.—For alterations and addition to Worcester Infirmary. Mr. Martin Birmingbam, architect :—

Everall	£5735
Yates	5295
Thompson	5223
Epsley	5075
Briggs & Sons	4990
Barnsley & Son	4950
Bennett	4947
Horsley Bros.	4934
Lovatt	4900
Welsh & Son	4900
C. Jones	4729
Jeffrey & Pritchard	4630
J. Beard	4494
Wood & Son (accepted)	4397

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Leeds, March 25.—For the erection of offices and warehouses, for Messrs. Goodall, Backhouse, & Co., Leeds. William Bakewell, architect, 12, East-parade, Leeds.

Leeds March 25.—For the erection of shops and warehouses, for Mr. G. Newby, Leeds. William Bakewell, architect, 12, East-parade, Leeds.

Leeds, April 3.—Building new bridge. Quantities supplied. Bridge Office, 19, Corn Exchange, Leeds.

Gloucester, March 20.—For the erection of a new chapel, day-rooms, and other buildings. Mr. Medland, the county surveyor, Clarence-street, Gloucester.

Herefordshire, March 25.—For the erection of a school at Bromesberrow, near Ledbury. Middleton & Goodman, architects, 1, Bedford-buildings, Cheltenham.

Isle of Ely, July 25.—For an iron bridge across the river Ouse, at Littleport. F. M. Metcalfe, Clerk of the Peace, Wisbech.

Debyshire, March 24.—For alterations and additions to the County Prison, Derby. Robert Griffiths, architect, Martin-street, Stafford.

Bicester, March 25.—For building a chapel at Fewcot, and a vicarage house at Stoke Lyne, both near Bicester. Rev. C. Marsham. Caversfield, Bicester, Oxon.

Ledbury, March 25.—For the erection of a school at Bromesberrow, near Ledbury. Messrs. Middleton & Goodman, architects, 1, Bedford-buildings, Cheltenham.

Oldham, April 5.—For the erection of new business offices, entrance lodge, &c., for the Gas and Waterworks Department. Thomas Mitchell, architect, Oldham.

London.—Metropolis Management Acts (Plumsted Parish).—April 5.—For laying down and constructing 2,700 feet run of 3ft. by 2ft. brick sewer, from Crescent-road, through Sandy-hill and Brookhill-park, to Fox-hill. J. Murray Dale, Clerk to the said Board, Plumpstead District Board, Offices, Old Charlton, S.E.

Abingdon, April 8.—For the restoration and repairing of S. Helen's Church. The Ven. Archdeacon Pott, Abingdon Vicarage.

Staffs., April 13.—For the erection of a small house, farm buildings, and bridge at Stanley, near Endon, for Mr. Isaac Robinson. Mr. Ralph Dain, architect, Shakespeare-buildings, Hanley.

Bedford, March 28.—For the erection of a farmhouse containing twelve rooms, with cellars and dairy, at Clapham, near Bedford. James Horsford, architect, No. 7, Well-street, Bedford.

Gorleston and South Town, April 3.—For the construction of about 3,300 feet run of from 2ft. to 3½ft. brick sewer, and about 7,700 feet run of pipe-sewer. Samuel B. Cory, Clerk to the Board.

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(Less costly than ordinary Gothic Tiling.)

These durable and non-absorbent Slates can be obtained in sizes suitable for Gothic Architecture, at prices as under.

In Railway Trucks, Docks, Gloucester :—

	Per 1,200 Slates.	Equivalent to per square.
Best Green Slates, 14 by 7	2 17 6	16s. 6d.
Do. do. 13 by 8	2 17 6	16s. 6d.
Do. do. 13 by 7	2 5 0	14s.
Do. do. 12 by 7	1 18 6	13s.
Do. do. 12 by 6	1 7 6	11s.

Prices of large Sizes, Cost of Transit, Reference Testimonials and Sample Specimens, may be obtained on application to

MESSRS. RANDELL & CO., Corsham, Wilts.

Specimens at Museum of Geology, Jermyn-street, Piccadilly, W. and at Architectural Museum, Tufton-street, Westminster.

BANKRUPTS.

(TO SURRENDER IN LONDON).

Frederick George Rimell, Asylum-road, Peckham, builder, April 13, at 11.

(TO SURRENDER IN THE COUNTRY).

Walter Banham, Purleigh, carpenter, March 22, at Chelmsford—John & James Wilkinson, Sheffield, builders, March 22, at Sheffield.

PUBLIC EXAMINATIONS.

April 19, C. Wakelin, Fleckney, Leicestershire, brickmaker.

DIVIDEND MEETINGS.

April 4, F. E. Shipley, Giltbrook, Notts., brickmaker

DECLARATIONS OF DIVIDEND.

J. H. & W. R. Taylor & J. Whittaker, Middleton builders, div. 3s. 4d.—Cochran & Parker, Manchester, contractors, div. 2s.3 ½d.—Terry, Whitwood, Yorkshire, builder div. 3½d.—J. Shipway, Great Malvern, surveyor, div. 2s. 3½d.—H. Stanley, Burton-upon-Trent, painter, div. 8s. 2d.

INSOLVENT DEBTORS' DIVIDENDS.

J. Ewins, late of Eccleston, Lancashire, builder, div. 2s. 10½d.

PARTNERSHIPS DISSOLVED.

Hately & Berry, Huddersfield, gasfitters—Ravenor Bros. Speenhamland, decorators—Harland & Fisher, Dover-road and Blackman-street, house decorators.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The *Civil Service Gazette* remarks :—" By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast table with a delicately flavoured beverage which may save us many heavy doctors' bills." Each packet is labelled—James Epps & Co., Homœopathic Chemists, London.

THE BUILDING NEWS.

◆

LONDON, FRIDAY, MARCH 24, 1871.

FORTHCOMING INTERNATIONAL EXHIBITION.

WE hear much of the progress made with the preparations for this new general rivalry of nations. It argues much for the civilisation of the world that, during a war so devastating and merciless as that just concluded, and the conclusion of which was so uncertain only a few weeks ago, even neutral nations should have time, thought, or courage to enter upon a great emulation of peace, when they stood in presence of a conflagration that might, at any moment, reach their own doors. Of course, France will scarcely, if at all, be represented, while the German illustrations must be comparatively few. But it may be time, though not too late, to suggest some considerations to Home exhibitors, especially those connected with industry and the industrial arts, regarded as distinct classes. Many serious mistakes were made both in 1851 and 1862, all capable of being avoided. We omit from notice, for the present, the structure in which the competing treasures will be housed, touching only on what may be expected in the British departments relatively to those of foreigners, since it is here that the importance of the display really begins. No doubt, there are very great difficulties to deal with, in laying out a survey of industrial advancement susceptible of being taken in at a single view—questions of space and of jealousy, of arrangement and due prominence, are inevitable. Thus, in 1862, the French insisted upon erecting a mighty screen, hiding from sight a thousand meritorious objects; the candle-makers of Holland and Belgium would have trophies in the most inconvenient positions; Hardman's exquisite painted glass was eclipsed on one side by North American boats and timber, and on the other by the Australian gold obelisk. Carpets were along the main line, while cabinet-making was hiding in the rear, which scarcely anybody ever penetrated. We trust that the managers of the new exhibition are sensible of these blunders, and intend to avoid them; for they are worse than errors, as inflicting gross injustice. The true interest of the whole affair lies in its due setting forth of the developments in the sciences and arts, from one period to another, in England and the other countries of the globe. We want to know how much has been done, and who is doing it, in, for example, photography, in the substitution of electricity for the casting of statues, and the costly old methods of gilding and silvering; and in fresh and cheaper dyeing processes. The glass palace of 1851 started, generally speaking, from raw material and industry simple. It has since been added to rather than repeated. We have seen the machinery of that industry as being, by reason of its intrinsic mechanism, among the noblest products of human mind and effort. We have crossed the broad borderland between the fine arts and the merely useful labours, and all this is intensely encouraging. An artist no longer signifies a painter or sculptor, or a work of art a picture or a statue. The constructive arts of an old time have reappeared in Europe—even in Great Britain—and they point to a rich promise in the future. But even on the verge of this prospect, we must pause once more to warn the Commissioners that they have a choice before them which they should not neglect. International exhibitions are degraded when turned into mediums of advertising, or into bazaars: into receptacles for things to be sold and not to be intelligently and critically examined. The fact is, that too many exhibitors want their stalls for purposes of direct and immediate profit—a direct and immediate injury to the inventive and artistic classes—and occupy valuable space by flashy shop-window shows. We do not, with some, deprecate the admission of malachite doors from Russia, though barren of design, or the praises of Austrian furniture, on the ground that the Viennese have a habit everywhere of bringing forward cabinet-work for palaces, as though every Austrian householder could command a similar luxury; but we do object to the multiplication of gimcracks to tempt the fancies of foolish people. On the other hand, it is impossible to expect a revival of the industries of the ancient Oriental regions, where ten thousand lived in squalor to one who enjoyed magnificence; where the appreciation of beauty was instinctive; where the untiring manipulation of detail knew no impatience; where the jeweller and the goldsmith ranked high in society—in India and Turkey, for instance—where art of every description was so jubilant in the use of colour, so fearless in the employment of precious material, so delicate in the elaboration of minutiæ. We must not attempt to recal those times. They are past for the modern world, in which an aspect of luxury and taste is sought by nearly every class. We must manufacture for trade, not less than for taste. The Russians have not hitherto understood this secret of the expanding day. They have loaded the various international exhibitions with book-bindings of silver and enamel, ecclesiastical plate, heavy and gorgeous; mosaics on gold grounds; imperial porcelain vases in imitation of Sèvres; floral incrustations of the costliest character, copying the Pietra Dura of the Florentines; mimicries of strawberries, currants, berberries, and raspberries, in half-transparent and expensive stone; while their peculiar ingenuity, the veneering with malachite—a truly noble invention—is almost entirely neglected. Now, these are not triumphs to be envied or emulated by a practical people; nor is the Spanish ambition of rediscovering the secret of damascening the steel of their Toledo blades; it is not a nineteenth century requirement. Perhaps a similar remark, in a different degree, might apply to the pictorial mosaics and cameos of Rome, as distinguished from the rest of Italy, and to Salvati's endless ingenuity in glass work, Campana's manufacture of artificial marble, Guion's revival of the antique Capoda Monte ware; but all these are largely available for modern use, cheaply to enrich our dwellings, and produce copies, where originals are not to be had, for our museums. Well, it will be interesting to see whether any, and if any what, changes have been adopted by the various nations in these respects. Will Austria still rely upon her furniture, her stamped and coloured leather wall-hangings, and her maps and geographical models; Prussia on her costly porcelain and silver-work with steam locomotives and monster cannons; Bavaria on her china figurantes in fantastic dresses, and nymphs in no dresses at all, and her pictures cheaply copied and printed in oil-colours; Frankfort on her toys in staghorn; Belgium on her laces, chimney-pieces, tapestry, candles, and pulpits; Holland, on wood; Denmark, on plagiarisms in porcelain from Sèvres; Greece, on embroideries and carvings; and the United States on a case full of native bank-notes, and a pedestal perching up an image copied, with variations, from Power's "Greek Slave," exhibiting a slave girl, naked and chained, as no girl ever stood naked and chained, in ancient Greece? As we have said, we must expect France to be almost wholly absent. We shall have none of Christofle's sumptuous gold work, of Mazeroz's cabinets, of the Rue Royale jewellery, of the woven pictures from Beauvais and the Gobelins, of the Barbedienne and Paillard bronzes (for Paris has been too busy with metals of another kind), of French paper-hangings, book-binding, ecclesiastical metal work, and copper moulding, which gave so many ideas, and were so much commented upon, in a spirit of almost invariable praise, nine years ago. And, above all, what will England show? And what progress will she demonstrate? This, be it remembered, is not to be an international exhibition on the same plan or scale as the exhibitions of 1851 and 1862. It is to be more exclusive and less miscellaneous. We hope to be, plainly speaking, not so vulgar and random as we were on those occasions. There was much then to send us home disgusted; while there was enough, also, to send us home proud. We trust to discover that the artist has been more closely in partnership with the producer during the years which have elapsed. Thus, how far will it be proved to be prevalent that architects are associated with builders in the erection of private houses? Designers have long been needed who were not merely designers—men of more versatile training. With regard to them, again, what will be the evidence, set in comparison with that of other nations, of their education in the employment of polychrome, and in the dealing with materials other than brick and iron? We shall see, too, how far our schools of design have succeeded, whether in paper-hangings, cheap or dear, furniture of all classes, and carpets. We suspect that we have made most progress in cabinet making. The old forms of upholstery are going out of fashion altogether. Finer and more flowing lines are used, and a larger variety of woods. Cheapness is obtained, not by tawdry staining, but by resorting to simple varnished deal, most excellent in effect. We no longer cover our walls with fortifications or our floors with birds and flowers of impossible plumage and size. And in pottery ware, we are at last entitled, beyond a doubt, to turn our backs upon Dresden. We do not shine in brass; but in glass, except in glass-painting, our advances have been great. The subject, however, is a large one, not to be exhausted immediately. It embraces iron, wrought and cast, Mediæval restorations in bronze, the goldsmiths', jewellers' and glyptic arts, and, indeed, a range so immense as to be impossible of survey without a repeated return to it. We may, nevertheless, have indicated our principal idea, which was that of pointing out the higher fields in which competition may be at once honourable and profitable, both to the individual and to the community. Our desire must be that workmanship shall exhibit invention also, and not simple adaptation. Our previous recapitulation will have suggested the national characteristics of art and industry in several countries of the world. Of England it was once said that its industrial art, belonging to a people seriously-minded, and which has a peculiar devotion for home, is partly social and partly religious. It travels from house to church, and from church to house, and takes its forms and colours from each. Perhaps hardly sufficient stir has been made about the forthcoming display to excite emulation enough to render it very wide of range or magnificent of aspect. If so, it is to be regretted, for an international exhibition, properly composed, is a mighty book to read, better than all encydopædias. Would you know where the richest ores, the costliest jewels, the largest diamonds, or the rarest gems are to be sought; where the finest flax, wool, cotton; where the most useful inventions of every kind, from the magic balance that turns at the thousandth of a grain to the giant hammer that flattens a block of iron at a blow, are to be found, you may consult those universal pages. One other remark may be offered, as pointing to a singular historical parallel. We are about to celebrate this festival of peace on the morrow of a terrible war between our nearest neighbours. That being the case with 1871, what was the case with 1851? Why, that the whole of Europe was in a state of almost unprecedented political convulsion. From the Weser to the Danube, from the Belt to the Caspian, preparations for fighting were going forward, and armies were thronging to their camps, yet the Hyde Park Exhibition was a triumph. This retrospect strengthens our hope that, despite the still excited state of the Continent, that of 1871 will not be a failure.

THE "CRITERION" COMPETITION.

MESSRS Spiers and Pond have set an admirable example, and one which will redound to their own advantage, by the method they have adopted of obtaining designs for their proposed new building—"The Criterion."

The "Criterion" will be an establishment for public entertainment of a first-class character, comprising a refreshment-bar of the nature of a Parisian café, with public and private dining rooms, a large galleried hall, and secondary hall of smaller size, smoking-rooms, hair-cutting saloon, and other similar accommodation.

The site upon which this building is to be erected is one that has been lately cleared in Piccadilly, close to the Circus at that end of Regent-street, on the side next Leicester-square, and with frontages towards Piccadilly and Jermyn-street. It is without question well suited to its intended purpose, and its area is ample for the accommodation required. Messrs. Spiers and Pond have set about their work in an intelligent and liberal manner, which we will shortly describe, in order that it may serve as a precedent for consideration in other similar undertakings.

Having, by advertisement, invited applications from architects for the privilege of submitting designs, they selected fifteen from the number of those who responded. They then offered four premiums of 150, 100, 75, and 50 guineas respectively, on the condition that the premiated sets of drawings should become their own absolute property, with liberty to utilise them as deemed expedient. It is true that they reserved to themselves the privilege of appointing their own architect to carry out the works, and did not bind themselves to employ any or either of the competing architects, or to carry out any of the designs submitted; but they gave it clearly to be understood that they had no special architect in view when they offered the competition.

In case of their employing one of the architects whose designs received a premium to carry out the buildings, they have agreed to give him 1,000 guineas as a fee, to include all necessary drawings, specifications, superintendence, and travelling expenses, connected with the building, its decorations and fittings, the premium awarded forming part of the said thousand guineas, they appointing their own surveyors to supply the builders with proper bills of quantities. These terms, considering that the cost of the building they proposed should be £20,000—subsequently, we understand, increased to £25,000—exclusive of the cost of most of the fittings and decorations, are, perhaps, hardly adequate, as the character of the work is most complicated, and the usual 5 per cent. commission upon the above sum will be fairly earned by its architect, and he ought to be paid a still higher commission upon the subsequent fittings and decorations, instead of nothing at all. Besides which it would appear certain that the building itself can hardly be erected for the above stipulated amount, which still further reduces the rate of commission upon the expenditure. However, the competing architects were understood as assenting to all the conditions as laid down, and, therefore, they cannot object, although we, on behalf of the profession, would ask Messrs. Spiers and Pond to revise them. One of the conditions was as follows:—"That the architect shall not be employed to carry out his design, nor entitled to any payment or premium in respect thereof, *unless a substantial contractor, to be named by Messrs. Spiers and Pond*, will undertake to execute the works for a sum not exceeding 10 per cent. above the architect's estimate, which is to be sent in with the designs." This taken with the following:—"That Messrs. Spiers and Pond *will appoint their own surveyors to supply the builders with proper bills of quantities*," seems somewhat arbitrary, and might lead to much professional "Love's labour lost," but we doubt not this provision will not be unfairly or too stringently applied. Although Messrs. Spiers and Pond reserved the right of seeking professional aid in their choise of the designs, we learn they did not exercise it; but it is evident that they gave them the fullest, and we think the fairest, deliberation, tabulating the respective advantages of all the designs, particularly in point of accommodation, and they were not misled by specious or attractive drawings.

The first premium they awarded to the author of the set of drawings sent in under the motto "Each bird her nest esteemeth best," who proved to be Mr. T. Verity; the second to Mr. R. Phené Spiers, for the design marked "St. James's"; the third to Mr. Power, for that signed "Arrangement;" and the fourth to Messrs. Evers and Mileham, for one with the motto, a triple tau in a circle. As these four sets of designs were in our opinion, as well as in that of Messrs. Spiers and Pond, decidedly the best, we shall mainly confine our remarks to them, and examine how far they have solved the very interesting problem set.

The requirements were, briefly:—On the basement a second-rate general dining-room, with grill, kitchen, &c., servants' hall and other accommodation, with a minor hall to hold 1,000 persons either on or below the same floor, with entrances from both Piccadilly and Jermyn-street. On the ground floor: a grand entrance, with vestibule, grand bar, or buffet, 120ft. long, a dining saloon for 150 persons, a cigar divan and smoking-rooms, hair-cutting saloon, &c.; and there were to be separate entrances for professionals and the several classes of the public. Above, a grand hall of the largest possible dimensions was asked for, with separate supper-rooms in connection with it, and other dining-rooms; then billiard-rooms and dining-rooms for parties of from ten to eighty persons, a photographer's atelier, and a fine art gallery in connection with it. Manager's rooms and sundry bedroom accommodation were also required.

Mr. Verity's arrangements are certainly very good, but are obtained with a considerable sacrifice of light in many parts. He gets his main entrance in the centre of the façade in Piccadilly under a large recessed archway, opening into a rectangular vestibule about 30ft. by 25ft, with the principal staircase at the end, opposite the entrance. Archways on either side of this staircase lead to the buffet, 104ft. by 25ft., on the left hand, and the dining-saloon, 71ft. by about 30ft., on the right hand. On the right hand of the entrance from Piccadilly, is a shop and smoking-room beyond, extending as far as the vestibule, and a staircase to minor hall on the left. An entrance staircase is open to Jermyn-street and kitchen beyond, between the bar and dining-room. The minor hall, 70ft. by 35ft., is under the dining-room; and the grand hall, about 80ft. by 50ft., occupies the whole Piccadilly façade on the second floor, rising to the roof. The kitchens and serving-rooms seem well-arranged one over the other, and comply, as far as possible, with the requisition "that the general culinary department is to be of such a nature as will allow of easily increasing or lessening the working power of the same."

We consider, on the whole, Mr. Verity's arrangement of this complicated plan to be excellent—with this one, we must own, serious drawback, of a large portion of the building being but indifferently lighted. There is only one internal small area visible on the ground floor.

The principal elevation is stately, and bespeaks the purpose of the building. The great entrance archway rises through two floors with a fine effect, and the wings have sufficient solidity. The fenestration of the principal hall on the second-floor is striking, but rather overpowered by the heavy attic above. The roof, with the wings carried up on lofty pavilions, gives a good sky line. The elevation towards Jermyn-street is also effectively treated. The interior views are not remarkable, nor generally the detail, which is of ordinary Renaissance character, very commendable; and perhaps Mr. Veirty would not be greatly wronged if the decorations, such as he has proposed, were thrown in with the commission upon the rest of the building.

Mr. Phené Spiers's design is also a very admirable and well-thought-out one, and he certainly has earned the premium awarded to him. A more modest entrance from Piccadilly leaves room for cigar and perfumer's shops on each side, as well as an entrance to the grand buffets and minor hall at the extreme ends of the façade, so that this has five divisions in place of Mr. Verity's three, and the buffets have direct, as well as borrowed light. The first-class dining-saloon is thrust to the back, facing Jermyn-street, and the greater part of the front block appropriated to the grand buffet and ladies' restaurant, with the vestibule between them, and staircase opposite the entrance beyond, a striking and effective arrangement. This plan shows three small areas for light. Both grand and minor halls occupy the whole o the front part of the building next Piccadilly, an arrangement which simplifies the construction, as only the partitions of the shops, &c. are needed on the intermediate floor. Th kitchens are also in a block of the buildin to themselves, carried right up; but this is no so central as in Mr. Verity's plan. The eleva tions, though less effective, are perhaps mor refined, and the details of the interior are fa preferable to those of his successful compet tor. The somewhat over-wrought sectio certainly show that the decorative treatme Mr. Spiers would propose would deserve i full and fair remuneration.

Mr. Power's design has a good and simp ground plan, well lighted, with the grand r staurant to the left vestibule and staircase centre and grand buffet to the left, and h hair-cutting saloon is banished to the ba next Jermyn-street. The kitchens, are, ho ever, twisted about, and not well arrang above each other, and the service would ha to cross the corridor objectionably, otherw the directness of the corridor with regard both the entrances from Piccadilly and Jerm street is good. The principal elevation is l architectural and more shoppy than those have reviewed. The piers between the f arched window of the first floor come not o over sheets of plate glass, but actually over side of them, and the treatment of the inte is very common-place. The size of the gr hall is comparatively small, being only feet wide.

Messrs. Evers and Mileham give a g dining-saloon to the right-hand of t principal entrance, but waste space in t too-long vestibule in the centre; the bu with manager's room hardly sufficie lighted, is to the left, with smoking-roo one end and billiard-room at the side of other end; and their kitchen spreads over ne the whole of the fourth floor; and gene the plan lacks compactness, as also in t of treatment do the elevations.

The design with the motto "Thoro seems deficient in kitchen accommodatio serving-room, having only the kitchen two subsidiary ones, and those not enough; the façade is piled up into a midal form, with a centre block which powers and cramps the wings. The hall is turned with its end towards Picc within this central block, and the vestib a circular one, beneath it.

"Proportion" is the motto of a submitted by Mr. Driver, which has siderable merit in its elevation towards Piccadilly, which is divided into seven bays. His façade on the ground floor, is sacrificed to the hair-cutting saloon and entrances at the extreme right hand to the grand bar at the back of the building, without direct light. The grand hall is placed in the same position above, and the kitchen accommodation seems neither sufficient nor central.

"Adapted" is the motto attached to a poor design, the interior of which is cut up by too many small interior courts.

"In Domino confido," a curious motto for such a building, gives entrance to the grand bar, without any vestibule like a Parisian café. This would lead to great confusion, as visitors to the other departments must pass through it. Kitchens seem conspicuous only by their absence.

"Otium cum dignitate" has an elevation which is heavy, and without unity of treatment, but a cleverly-treated ground plan. The grand buffet would be effective, with its bar breaking round an area to give it light. The establishment is provided with two distinct kitchens.

A red cross in a circle is the motto of a plan which puts the first-class dining-room on one side of the façade, the vestibule in the centre, and bar to the left. The vestibule expands to a large space within, with two circular well-holes round iron staircases, somewhat to the sacrifice of more important accommodation. The elevation is rather picturesque, with a central gable somewhat after those of Heidelberg in treatment. The plan seems well lighted, and to possess considerable novelty.

"Camdensis" has an elevation not without effect, and giving plenty of light, but injured, by a heavy segmental-headed wide dormer over the central bay. The high roof and chimneys group tolerably well. The smoking-rooms seem ill-lit and ventilated.

"Excelsior," by Messrs. Drury, Lovejoy, and Roper, joint architects, is a creditable design. It has two grand staircases opening from the Piccadilly façade, at either end leading to minor and grand hall, but their being circular would be hardly suitable, though their position is good. The hair-cutting saloon is at the back. The grand hall, unlike other designs, is on the first floor; it is T-shaped, with transepts at one end, with galleries in them, and also at the opposite end of hall, with communicating gallery passages. There are professional retiring-rooms behind the grand hall, with separate staircases and services. The view of the grand vestibule and bar, with triple arcade on each side with Gothicised carved details, is simple and effective, and the drawing is a good one. So also is that of the interior of the great hall. The elevation next Jermyn-street is simple and appropriate, but that next Piccadilly has the entrances poor; above the ground-floor its effect is not bad.

"Experience" has its staircase sacrificed to the bar, which occupies the centre of the façade, and is hardly well lit. The dining-rooms, separated at the front and back, would be difficult to serve. There are only kitchens in the basement. The elevations are too much cut up.

The limits of our space compel us now to part company with this interesting set of plans for a building the erection of which we shall watch with considerable interest, and trust it may, by its completeness, repay the labour expended upon its design by so many able architects, and the spirited conduct of its proprietors.

VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."

III.

THE next word we shall borrow from this excellent work is one of interest to all our readers. It is that of *architecte*, a word hardly existing in mediæval times; for the function now-a-days represented by this word did not exist until the latter portion of that period. Formerly the architect was "the master of the work," not merely the preparer of the plans and the receiver of five per cent. "It does not appear to me," says M. le Duc, "that this name was given to the artists charged with the direction of the construction of buildings before the sixteenth century." Architecture held its place amongst the liberal arts, and was personified by a man or a woman holding a square or a compass; but the artist, the man of business, was known as the "master of the works," a designation then of significance, for the works then consisted of everything, from the foundation to the hangings on the walls, and embraced all the furniture. Of the personality of the architects who existed before the thirteenth century very little is known. The great religious establishments up to the end of the twelfth century were the home of all the men of letters, the philosophers, and the students of the West, and it is very probable they furnished the architects not only for monastic constructions but for civil and military ones also. The schools founded by Charlemagne rose under the shadow of the Church, and it was necessary for all who devoted themselves to the study of science and art to seek refuge there. Geometry, drawing, sculpture, and painting could not be learned excepting in those establishments, which still retained some little calm and tranquillity in the midst of the dismal chaos which marked the Carlovingian epoch. Towards the end of the tenth century, when it seemed as though civilisation would be extinguished by barbarism, an abbey was founded at Cluny, and for more than a century there issued from this birthplace of the Cluniac order nearly all those men who marched forth, with incomparable patience and energy, to struggle with and to stay the progress of barbarism, to create some sort of order out of chaos, and to become the founders of monastic establishments over the greater part of western Europe, from Spain on the one hand to Poland on the other. There is no doubt but that this centre of civilisation, during the dark ages of the eleventh and twelfth centuries, threw as great a light on art as upon letters. There is no doubt that Cluny furnished architects to western Europe, as well as clerical reformers, painters, schoolmasters, philosophers, doctors, ambassadors, bishops, kings, and popes. Extinguish Cluny and you find in the eleventh century nothing but darkness, gross ignorance, and monstrous abuse. Whilst St. Hugues and his successors struggled against the spirit of barbarism, and, above all, maintained the independence of the spiritual power with a perseverance of which the history of civilisation offers but few examples, it made in the third estate a revolution of immense importance. A large number of towns, and amongst them the most important of those in northern and eastern France, had established themselves as "communes." Thus the relics of the Carlovingian feudalism were undermined by the spiritual power on the one side and by popular insurrection on the other. For the first time the civil element appeared on the scene with its own peculiar organisation. It wished to govern itself; it commenced to speak of its rights, of its liberties; it joined issue with the clergy in struggling against the temporal lords, and it leagued itself with the suzerain to crush his vassals. From the midst of all this turmoil the citizens made themselves heard; they learned to know themselves, to measure their own strength. They wrested from their rulers charters and privileges, organised their own corporations, and, lastly, found themselves strong enough to band themselves together. "Then arts and sciences ceased to be exclusively shut up in the cloister." "Once without the monastic walls, the profession of the art of architecture, as that of all the other arts, became civil occupations. The master of the works was henceforth a layman; he belonged to a guild and commanded workmen, who, for the most part, were incorporated with it. Wages were fixed by juries; hours of labour, the relationship of the superior officers to the workmen, were all thus regulated." "Outside the cloister emulation was added to the love of study; traditions changed, and a rapid progress ensued. Art became individualised; it divided itself into schools. At the end of the thirteenth century the artist asserts himself, and impresses upon others his individual taste and his own ideas." The higher orders of the clergy seem to have fostered and profited by this advance; for in the early part of the thirteenth century, we find a bishop of Amiens entrusting the construction of his cathedral to a lay architect, one Robert de Luzarches, whose work was continued by Thomas de Cormont, and his son Regnault, and the memory of all three is yet preserved by an inscription on the pavement of the church. In 1240, Saint Louis entrusted the erection of the beautiful Sainte Chapelle at Paris to the layman, Pierre de Montreuil, and the same architect was engaged by the monks of St. Germain de Près to build their charming chapel of the Virgin, where, with his wife, he lies in the midst of the choir. In 1229, Hugh Libergier built the beautiful church of St. Nicaise at Reims, and rested there under an incised slab, whereon was his effigy, representing him holding a rule in his left hand, in his right the design for that church, upon which he was engaged thirty years; and at his feet were the working tools of the master mason—the square and compasses. Notre Dame at Paris, owes its first chapels of the choir to Jean de Chelles, who was its architect in 1257; and twenty years later, Eruin de Steinbach commenced the west front of the glorious cathedral of Strasbourg, and his name is engraved over the principal entrance. Dying in 1318, he was succeeded by his son, who lived to see his father's ideas carried out so far as the first storey of the towers. All these were laymen; and from the Domain Royale, more particularly from the Ile de France, came many architects of the twelfth and thirteenth centuries, whose names have perished. We, unfortunately, do not know the names of those grand architects who built Chartres, Reims, Noyon, and Laon, or who designed the admirable façade of Notre Dame at Paris; but archæological researches frequently bring new facts to bear upon these points, and enlighten us on their studies and the mode in which they proceeded. Since M. le Duc commenced this work, the sketch-book of Villars de Honnecourt has been published in France and England, and is full of interest, not only to the professional architect, but to all students of civil life in the thirteenth century. It was he who built the choir of the now destroyed cathedral of Cambrai, and whose fame spread so far that he was sent for from distant Hungary to undertake important works there. His friend and contemporary, Pierre de Corbie, was much engaged in Picardy, and was, perhaps, the architect of the apsidal chapels to the choir of Reims Cathedral.

The duties of a thirteenth century architect are not very well defined, as we have but very little documentary evidence on this point handed down to us, but in the early part of the following century it appears certain that he not only furnished the designs, but also bought all the materials and engaged the necessary workmen, though at this period it does not appear that he had anything to do with the valuation of the work, or the administration of the funds. That duty was not imposed upon him till later, and when it was—when he became a species of contractor, and participated in the profits—he lost his importance, and his art declined. M. le Duc gives us an extract from the register of the Cathedral of Gérone in Catalonia, which, although not direct evidence as to the duties of French architects, may nevertheless be received as collateral evidence, throwing a light on the principles on which such duties were based. Here is the extract from folio 48 of the "Curia del Vicariate de Gerona liber notularum ab anno 1320 and 1322":—"The Chapter of the Cathedral of Gerona decided in 1312 to replace the old church by a new one, larger and more dignified. The works were not immediately commenced, and Raymond de Viloric and Arnauld de Montredon were appointed overseers of the works. In 1316 the works were in full progress, and in February, 1320, the capitular registry bears the name of Henry de Narbonne as master of the works. Henry died, and another Narbonnaise architect, named Jaques de Favariis, was appointed in his stead, who engaged himself to come from Narbonne six times in the year, and the chapter agreed to pay him two hundred sous quarterly." We here see an administrative body, who probably arranged all the commercial transactions, called in an architect, not to reside on the works and be absolutely a master builder, but only to direct the operations, to furnish the requisite details, and to make a general surveillance from time to time, paid, not by a per-centage, but by a sum of something like six hundred pounds a year, and enjoying the pleasures of a regular recurrence of quarter day. Blessed epoch! When will those happy days return? Probably about the same time that architecture becomes again a fine art, and ceases to be a trade. In those days lodgings for the architect and the master workmen were built close to the church. There was in those days a workhouse always on the premises and the architect lived in it; but workhouses then meant the thing they were called. In it were the muffles of the glass stainers, the studios of the sculptors and the painters, and a perfect colony of artists established themselves, and lived from father to son under the shadow of the building they erected and adorned. Down to the last century these buildings remained at Metz, when Blondel swept them all away to make room for his Italian baldnesses, and the names of the streets in the immediate vicinity of many of the Continental cathedrals yet bear the names of the various trades which once inhabited them. People then had time, not only to work, but to live, to learn, to teach, and think. Each building of importance became a school, and trades unions went in for trade progress instead of ignorance, and handicraft was studied more than vague theories of political economy. But even then as even now, a little learning was a dangerous thing; it made men, not wise, but conceited, and trades unionism grew rampant in the fifteenth century, and as all trades unionism will, it led to disruption. We have only to look at the state of the building trades, as reported upon to the Chapter of Reims at the end of this century and the commencement of the sixteenth, to see the state of anarchy into which all this order had from these causes fallen. Under the reign of Louis XI. a fire occurred which burnt off the roofs and destroyed the upper portion of the masonry, and all the various trades were called in to advise how it should be rebuilt. Then came the delegates from the masons, and the carpenters, and the plumbers; there was the "Noble Grand" of the Ancient Order of Blacksmiths, and the Most Wise from everywhere, and a pretty mess they made of it. Each trade worked independently of the other; they destroyed the harmony of the building and found none amongst themselves. The plumber sent his water spouts where he liked, quite irrespective of where the carpenter had made his roof to shed the water, who also was regardless of where the mason had intended him to do so. The stone-carver—we can hardly dignify him with the good old name of sculptor—worked at home, and came and hung up his handiwork on the wall as though it were an easel picture, painted for anybody who would pay the sole thing needful—the price.

Metaphorically, these garotted the architect—he became simply an engineer and a keeper of accounts, and amongst them they murdered art. Henceforth these assassins simply struggled amongst themselves; progress was no longer made, and the true principles which had led to such grand results were forgotten. Architecture became chaotic, and had to go through another period of struggle before she could come forth shapely again; then she changed her shape and appeared in the Renaissance form, into the study of which and of her architects the limits of the consideration of M. le Duc's most suggestive book will not lead us.

Turning to M. le Duc's admirable *résume* of the history of architecture as an art during the prescribed period in France, as might be expected, the definition given under this head is a long one. It is, in fact, an essay on the art as developed in France from the eleventh to the sixteenth centuries; and, in order to do justice to the author, we shall be compelled to extract very largely from it. M. le Duc is by no means a discursive writer; it is not possible to condense him much. Large as is his dictionary, there is no redundancy, no writing for mere writing's sake, and it is with difficulty we can omit anything he has written on those particular subjects which force themselves upon us for extract. The art of architecture he defines as composed of two elements—theory and practice: theory embracing the art proper—that is to say, "those rules which are either born of tradition or inspired by taste, as well as the science which demonstrates itself by absolute and invariablee formulas. Practice is the application of theory to our wants, which accommodates both art and science to the nature of the materials to be used, to the climate, to the manners of the epoch, and to the requirements of the time. In examining the architecture of one phase of civilisation at the point where it succeeds another it is necessary to take into account the traditions of the one period and the newly-found wants of the other." For this reason M. le Duc divides his essay into several parts, the first comprehending an historical summary of the origin of the architecture of the middle ages; the second treating of the development of Mediæval achitecture from the eleventh up to the sixteenth century, indicating those causes which led to its progress and its decay, together with an examination of the different styles peculiar to certain provinces; the third embracing religious architecture; the fourth monastic; the fifth civil, and the sixth military architecture. Into each of these divisions it will be necessary to follow him somewhat at length, the deductive process of reasoning adopted by M. le Duc being, in our eyes, the most valuable portion of his work, and of the highest interest in the history of the art he illustrates. Taking, then, this first division of the origin of French architecture, our author says:—"When the irruption of the barbarians into Gaul took place"—not that last one which has just occurred, but that of the sixth rather than the nineteenth century—"France was covered with Roman monuments; the indigenous population had long since conformed themselves to Roman modes of life, and it required three centuries of disasters to wean them from the traditions of antiquity. Down to the sixth century there existed in the midst of the Gallo-Roman towns a large number of edifices spared from devastation and fire, but the arts were not—they had perished, and the buildings remained as insoluble enigmas, constructed by a people unknown to those barbarians who then definitely settled themselves down on the fertile soil of France. All that related to daily life, to local government, and to language, yet survived the disasters these rude people brought in their train, but the art of architecture, which demands quiet, study, and time for its production, had necessarily succumbed; it had been forgotten. The few fragments which remain to us of the architectural attempts of the sixth and seventh centuries are but the pale reflex of Roman art—often, indeed, the *débris* of former structures heaped up by unskilful hands. No particular character distinguishes these formless buildings, and they seem rather to give the idea of the decadence of a people than of its infancy. Indeed, what elements of art had the Franks to import into the Gallo-Roman population? The clergy established themselves in the basilicas and temples. The kings inhabited the baths, the ruined palaces, or the Roman villas, and when the barbaric hurricane had passed, when the new masters of the soil were fairly established, they reproduced in their churches or palaces the Roman type, but avoided everything difficult of construction." In fact, the Franks brought in by Alaric did in Gaul much the same as their cousins-german, the Saxons, whom Hengist and Horsa brought over into Britain. Indeed, the parallelism of the two countries was very great at this epoch, the same causes were producing the same effects, and if we compare the description given by Gregory of Tours (who wrote in the latter half of the sixth century) of the church of Clermont-Ferrand, built in the fifth century, with some of those described by our own contemporary historians, we should hardly know which was which. Here is the Touraine bishop's account:—"Saint Numidius (eighth bishop of Clermont-Ferrand) built this church, which yet exists, and which is the most ancient of those which we find in the town. It is 500ft. long, 60ft. wide, and 50ft. high from the floor to the roof of the nave; at the end is a round apse, and on each side extend elegant aisles. The building is disposed in the form of a cross; it has forty-two windows, seventy columns, and eight doors. The walls of the nave are ornamented with several kinds of marble adjusted to each other." It will thus be seen that this was a basilican church—built, in fact, like the earlier ecclesiastical edifices of our own country, *more Romanum*, and it is not improbable that its architects, like those of Jarrow, were imported from Rome. "The new masters of the Gaulois established themselves by preference in the midst of those lands, which they divided amongst themselves. They found there, in the agglomeration of husbandmen and serfs accustomed to agricultural pursuits, a source of revenue easy to perceive, sufficient for the wants of a German chieftain. The towns yet preserved their municipal government—a feature commending itself to and respected by the barbarians. But these vestiges of an older civilization could not fail to embarrass the new-comers, strong and powerful though they were. The conquering strangers loved not to find themselves in the presence of a population superio to themselves in manners and civilization; a moral restraint, at least, would trouble thes savage and independent men. Violen exercises, the chase and war, with an orgi now and then for a little diversion, suite their camp life; and thus, under the first race the isolated Roman villas were preferred a the residences of their kings and chieftains There, the conquered and the conquerors live together, and the buildings resembled larg agricultural establishments. There the Fran kings held their court, there they gave them selves up to the pleasures of the chase, an lived on the produce of the soil, which the gathered into immense garners, and whe their provisions were all gone, they change their residence, and "requisitioned" a ne district. The house portion of these establishments was decorated with a certain simpl elegance. Vast porticoes, huge stable spacious courts, and large covered space wherein were convoked the synods, where th court was held, and where those mighty d bauches took place, made up the chieftain residence. Out-buildings, in which we lodged the officers and retainers su rounded it, and beyond stretched away lo lines of houses occupied by the industri classes, male and female, necessary to supp their wants—from goldsmiths to blacksmiths, from weavers to cordwainers, all were there, and the villa became a village. This aggregation, as we shall afterwards see, produced a great effect upon the history of architecture.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting on Monday evening last, Mr. **Edward I'Anson**, vice-president, occupied the chair. The minutes of the last meeting having been read and confirmed, and several donations to the library announced, Mr. J. B. Mitchell Withers, of Sheffield, was unanimously elected a Fellow.

The next business was the election of Examiners and Moderators for the Voluntary Architectural Examination to be holden this year.

The **Chairman** said that the Council suggested Professor Kerr, Mr. Aitchison, and Mr. Tarn, as fit and proper persons for Examiners, and recommended that Messrs. Phené Spiers and T. H. Watson should be elected as Moderators.

On the motion of Mr. **Hansard**, seconded by Mr. Hayward, Professor Kerr, Mr. Aitchison, and Mr. Tarn were unanimously elected Examiners; and

Mr. **Nash** proposed that Messrs. Spiers and Watson be elected Moderators, remarking that both those gentlemen were men of distinguished attainments. The motion having been seconded by Mr. **Charles Barry**, it was put to the meeting and carried without a dissentient.

The **Chairman** next read a letter from the Queen, in which her Majesty expressed her approval of the selection by the Institute of Mr. James Fergusson as this year's recipient of the Royal Gold Medal.

Mr. E. **Salomons**, Fellow, then read a paper entitled:—

A DESCRIPTION OF THE ALEXANDRA THEATRE, LIVERPOOL, AND ON THE CONSTRUCTION OF THEATRES GENERALLY.

After some preliminary remarks, the author said that he should, in this paper, as far as possible, confine himself to such points as his experience had taught him, avoiding altogether the literature of the theatre, as well as those strictly architectural portions of design or construction with which doubtless, every member was well conversant. The most convenient plan would be to take the subject under various heads, of which the following were, perhaps, the most important:—General arrangement, entrances and exits for audience, height of tiers for boxes, line of sight, construction of stage, mechanical arrangement of scenery, painting-room, and scene-docks, accommodation for managers and artists, workshops for different departments (viz., property-maker, carpenter, gasman, and metalworker), lighting of auditorium and stage, lime light, water supply, heating, ventilation, and decoration.

General Arrangement.—On this subject Mr. **Salomons** said that in the Alexandra Theatre at Liverpool he had tried to avoid what he considered to be a defect in most of our best theatres — even Drury Lane, with all its magnificence, had this defect specially marked — a certain coldness and want of comfort in the entrances, staircases, and passages. He therefore tried to assimilate his plan to that of an ordinary mansion, with its entrance-hall, staircase, ante-room, and grand saloon, so that having once passed the entrance, the visitor would be in a suite of rooms instead of again entering cold passages and corridors. Firstly, there was a carriage-drive, leading to the crush-room (an apartment of ample size), to the right; the audience was conducted by the grand staircase, 10ft. 6in. wide, into the *foyer* or ante-room, through which all must pass (thereby avoiding a cold useless room, merely attached to the theatre), and from thence at once to the *salle*—the French term, which the author preferred to use to "auditorium." The corridor was here merged into what were usually termed the boxes. Mr. Salomons said he adopted this plan first at the Prince's Theatre, Manchester; the advantages were many—a greater freedom of circulation, a space obtained for standing room on crowded nights, and a more elegant appearance. He was not sure, however, that this plan would answer in the metropolis, as there was not the privacy in entering the private boxes which he thought a London manager would consider most desirable. The theatre proper was on the first floor, by which plan a large amount of valuable space was gained—a most important point with the present value of land; it also prevented draught. The gain also was great on the stage. The only disadvantage was the necessary extra number of steps to the various parts of the house. The first point in commencing to work out the plans was the width of the opening of the proscenium. The advantages in making it larger (it is only 28ft.) would have been a greater capacity in the *salle*, as naturally the circles would be larger, and a corresponding grander effect would have been obtained; but he thought that this was far more than balanced by the disadvantages in this (a provincial) theatre. A large theatre when not filled looked very cold, and naturally had a chilling effect upon the audience, and as there were generally as many "poor" nights in a year (sometimes more) as good ones, this should be taken into consideration. Then to get the same effect with numbers on the stage, a large opening required so many more. For instance, where Drury Lane would require a ballet of 24, one of 16, or even 12, sufficed in the Alexandra; and probably by the general public the difference of numbers would not be appreciated; and so throughout with "supers," &c. This, of course, applied also to scenery, &c., which required to be so much less, which not only was a saving in material, but also in the labour of working; for instance, the largest cloths in a theatre in England were at Covent Garden, where they were 70ft. by 50ft., while at the Alexandra they were 40ft. by 28ft.; and although not double the size, they must have cost at the former twice as much, with working, as at the latter. The opening of Covent Garden proscenium was 50ft. It was also very desirable to have a small stage for comedies, farces, and other light pieces, where the audience should be able to see distinctly the facial play and finer points of acting, which would be lost on a large stage. If the Prince of Wales' company, for instance, admirable as it was, were transported to Covent Garden, the great perfection of the acting would be lost. The opening of the Prince's Theatre, Manchester, was 26ft., and this Mr. Solomons thought just too small for the purpose which the directors had in view. This point settled, the next was the consideration of the form of the fronts of the circle. In his opinion the most perfect form would be a semi-ellipse, with its long axis parallel to the curtain-line. This, however, practically, would not do, as the number held by a theatre so formed would be too few; therefore a modification must be made, and, taking all circumstances into consideration, convenience, number of audience, and beauty, the horse-shoe, and its various modifications, was, in his opinion, undoubtedly the best, although he had recently built a theatre of a novel form. In this case, being rather pinched for space from back to front, he might say that the curve formed itself, as he had to so great an extent to be ruled by the formation of the ground, and it was desirable to get as many rows of seats as possible. One peculiarity was that the pit did not extend under the boxes. This was decided upon by the directors, whose main object in building the theatre was not gain, but to have a handsome and luxurious house, worthy of Liverpool. With regard to acoustics, the natural form of a theatre was that best adapted for sound, and, to make success certain, it was only necessary to use wood in the ceilings and wall-linings.

Entrances and Exits.—The paramount importance of providing ample entrances and exits (with easy staircases without winders) in all public buildings was, no doubt, duly estimated by the members of the Institute; still, he wished to make a remark or two on this head in connection with theatres. In all cases, he thought, the place of exit and of entrance should be the same, because, as soon as ever an alarm took place, the audience naturally rushed to the doors by which it entered. These, therefore, should be of ample size. The staircases of the Alexandra were not, he regretted to say, all he could desire, although, perhaps, larger, in proportion to the number of the audience, than in any theatre in England. It was, however, more in arrangement than size that they were defective, and this was necessitated by want of space. The pit, circle, and gallery stairs were in the same staircase, 6ft. 6in. wide. There were good landings, but there were also some winders that should not be; these were a necessity in consequence of the cramped arrangement. Mr. Salomons did not think that in any case there should be a flight of more than from eight to ten steps without a landing. He found the following a good rule for the width of staircases: For any number up to 100, the staircase should be not less than 4ft., with an additional foot for every hundred persons. Thus, supposing a gallery to hold 700 people, the stairs should be 10ft. wide, and he therefore considered the stairs to the gallery of the Alexandra (which held about that number of persons) to be about 2ft. 6in. too narrow. No one could be insensible to the importance of providing properly for the escape of an audience, whether from actual danger or from panic; and the more so as it seemed never to have been satisfactorily settled how to prevent, or at least mitigate, the headlong rush and trampling which had so often occurred on such occasions. No doubt a wide passage was much better than a narrow one, where a large crowd of persons are all moving rapidly along together. But then the larger the aperture the more danger there was of the stream being overtaken and forced into a heap of fallen bodies by the pressure from behind, which, having no means of resisting the force, could only succumb to it, as in the fearful tragedy at Santiago. To prevent this, Mr. Salomons proposed to divide the passage into parallel sections by barriers 2ft. 6in. apart (which would allow two persons abreast), and about 3ft. 6in. in height, so that everyone could, all the time they were moving, have a support to lay hold of, and thus would only have to sustain the weight of the one or two immediately behind. For the same reason, but in a greater degree, the staircases should be divided in the same way. In planning the front of the house care would be required in so placing the money-takers and checkers that they might have proper access from the treasury behind, and be under the immediate control and inspection of the manager while the audience was coming in, so that any purloining or other irregularities might not easily be carried on.

The Manager's Room should be within easy access of the stage and the offices and rooms in connection with it, but its situation should also be very private, for there was no man whose privacy was less regarded, and he should therefore be out of the immediate reach of casual visitors and idlers. In the Alexandra Theatre his room was placed just between the green-room and front of the house, so that, should occasion require his attendance at either end, he would be close at hand.

Height Between Tiers.—In consequence of the dress-circle being nearly on the level of the stalls, and as there were only two tiers above, Mr. Salomons had less difficulty than usual with the height between the tiers. It was, of course, desirable that there should be as much head-room as possible between each tier, not only for the sake of appearance and comfort, but also of ventilation. It must, however, be borne in mind that the higher they were the greater the number of steps required, and as the back of each tier was necessarily the highest part, owing to the slope that was required to give the proper line of sight, this height was still further increased, so that in arranging the several tiers due regard should be paid to these essentials, as well as to the class of house intended, and its requirements.

Line of Sight.—This portion of Mr. Salomon's paper would be unintelligible without the diagrams with which it was illustrated, and these we are unable to give.

Construction of Stage.—The author said that to enter thoroughly into this subject would take him beyond his prescribed limits; he would therefore content himself with directing attention to the most important points that were necessary to be borne in mind. He did not approve of the English mode of working scenery; he objected most strongly to the general use of flats, and considered that the Continental theatres were far in advance of ours in this respect. Here, the ignorance of our stage carpenters and managers had to be contended with, and their prejudices in favour of old stereotyped forms and antiquated mechanisms were so rooted that it was almost useless to attempt any change, as it was sure to end in their making all the obstacles they could where difficulties appeared, and creating them where they did not exist. Mr. Salomons thought that all scenes that were not "practicable" should be painted on a cloth.* What could be worse than the way in which we saw landscape scenes constantly put upon the stage, at Drury Lane, for instance. First the two flats were pushed forward, in the vain hope that the upright joint (very often a bad one, and plentifully bedaubed with the dirty finger-marks of the scene-shifters) would meet without being seen; then a border had to be lowered to make up the necessary height and mask the grooves and border lights; then the side scenes or wings had to be pushed on to make out the requisite width. By this plan there were four joints, all perfectly visible, whereas, if a cloth had been used, there would have been none, for the size of the cloth would be just equal to the five pieces before named put together; there was.

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*The word "cloth," in stage parlance, signifies any scene touching the stage (not strained on framework), and worked either by roller or pulled straight up by battens top and bottom.

besides, a great saving in the expense of wood framing, less time was taken in painting, and one man did the work of five. Mr. Salomons said he was supported in this view by Beverly, Grieve, Telbin, and all our great scene-painters, who constantly regretted the difficulties they had to contend with. Covent Garden was the only theatre he knew in England with the stage constructed on this principle, and the finest scenic effects were got there. The height from the stage to the gridiron floor should be double the height of the cloth, and the Prince's Theatre in Manchester (the first theatre Mr. Salomons built) was the first one in which this could be done. The size of the cloths must be decided by the architect, so that the flies and gridiron floor should have their proper relative positions, and the painting frame be of the proper size. The opening of the Alexandra proscenium being 30 ft., the cloths should be 14 ft. wider, or, better, 16 ft., that is, 44 ft. to 46 ft. wide, but for want of width, he could only get them 42 ft., and the height was 27 ft. The flies, therefore, were 43 ft. apart, and the height from stage to gridiron floor was 54 ft., thus allowing the cloth to be taken straight up out of sight without folding—a great economy being thus gained in the working and space. It was a great defect at Covent Garden, where the cloths are 50 ft. high, that they had to be taken up in three folds, an arrangement which of course required a multiplicity of ropes and battens, and increased the wear and tear of the scene, besides taking up three times the space—a point of great importance. When the Alexandra was opened, there were no grooves either for flats or wings, the wings being worked on moveable ladders, as at Covent Garden, and the necessary framed pieces and flats for interiors and other "practicable" pieces were worked in a panoramic groove—that is, a framed piece out of sight, which could be let down in grooves for these framed pieces to slide in; but about a year since they altered this arrangement, and went back to the old system. They still, however, had as many scenes as possible on cloths, which was in itself a great gain. The height of these wings and flats Mr. Salomons fixed at 19 ft.; the depth under the stage should be sufficient to allow these pieces to sink out of sight. The width of each flat was 14 ft., and sufficient space should be allowed on each side to draw these off, with an ample passage beyond. It economised the working of the stage, the men did not get in each other's way, there was more room to remove and place properties, and, therefore, less chance of their being broken and damaged, and the dresses of the actors and actresses were not so liable to be spoiled. In this respect the Alexandra was deficient, though better off than most theatres. Beyond this, again, on each side there should be scene docks of sufficient depth to take a flat. Drury Lane was very well planned in this respect. The floor of the stage should rake from back to front, for the purpose of assisting the perspective effects, and giving greater ease to the performers in various actions, particularly in dancing; 1 in 26 Mr. Salomons had found to be the most satisfactory gradient. This inclination had a natural tendency to cause the whole stage to bear forward, a tendency increased owing to the absence of any longitudinal ties, which, as the bridges and sinks had to work transversely, must be dispensed with. To prevent this bearing forward the stage joists were usually "locked" with iron hooks from joist to joist the whole length of the stage, and before any bridge or cut could be used, those fastenings between the joists on such bridge or cut must be undone—a most unsatisfactory mode of working. At the Alexandra Theatre Mr. Salomons placed the uprights which supported the joists two inches out of the perpendicular, so that before any strain could push them forward it must first push them up, a tendency which would be resisted by the flooring. This plan answered well for a year or so, but a month or two ago it was found necessary to lock the joists in the old fashion; the necessity arising, probably, from the gradual giving and loosening of the joints and shrinking of the timber. Mr. Salomons here exhibited a section showing a plan which he anticipated might answer, but which he had not yet had the opportunity of testing. In this plan, instead of the sliders working in the usual way, he would fix an iron fillet on the edges, working in a groove, and thus each slider would form its own lock between its joists. He said he should very much like to have the opportunity of erecting a wrought-iron stage, as he felt convinced that more rigidity, and, consequently, more perfect working, could be secured in iron than in any other material; but he was afraid that it would be difficult to find a manager willing to go to the requisite expense. The mezzanine floor should be only about 6 ft. 6 in. under the stage, so that should any lever, rope, or slider go wrong, the men below could at once reach the defective part without the trouble or time necessary to fetch a ladder.

The *Painting-room* in the Alexandra Theatre is placed on one side of the stage; it would have been much more convenient if placed at the end of the stage, but sufficient depth for this was not available. The size of the room was of course regulated by the size of the cloth. Especial care should be taken that the frame was high enough to have the canvas stretched in one. It was very frequent—in fact, very general—in most painting-rooms, that when painting a cloth, it had to be done in twice, a defect which increased the working expenses, since not only had the carpenters to move the cloth after it had been once stretched, but the artist also had to work at his picture in patches, and stop at a certain line, however much it might interfere with his painting.

The *Dressing-rooms* for the principal actors and actresses should be comfortable and conveniently disposed, free from draughts, and within easy access of the stage. The steps conducting to them should be as few as possible, and distinct from the stairs leading to the dressing-rooms of the chorus, ballet, or supers.

In the Alexandra Theatre, the space at his command prevented Mr. Salomons from arranging these rooms as he should have wished. He was able to get only one dressing-room on the stage level, but at least four such rooms, two for ladies and two for gentlemen, should be provided. The stairs leading to the ballet and chorus rooms should, if possible, be at the end of the stage, so that there should be as little noise as possible. A sense of propriety would also suggest that the dressing-rooms of males and females should be approached by different staircases. Two *Green-rooms* should be provided, one for the principals and one for the ballet, &c.

The *Orchestra* should be of sufficient capacity to accommodate the full complement of musicians for a powerful and well-balanced band. In connection with the orchestra there should be a room for the assembling of the musicians and for tuning, &c., so placed that the sound of the instruments should not be within hearing of the audience, and another room for practising. There should also be a library for musical literature and score, which it was indispensable should be fire-proof.

The *Carpenter's Shop* in the Alexandra Theatre is below the stage on the mezzanine floor; it would have been better could it have been placed on a level with the stage, on account of the difficulty in getting out the large pieces of framework now so constantly used in theatres.

"*Property*" *Department.*—"Properties" accumulated very fast, and as some of them were very costly there should be sufficient room to store them carefully away. There should also be a small room near to the prompter, so that the properties required for the night's performance might be close at hand. A well-lighted room of ample size was necessary for the making of properties, the position of which was not important so long as care was taken to have an ample passage from it to the stage, so as to allow for that transit of the more bulky articles. In the Alexandra Theatre this room was placed behind the gallery.

Gas and Lime-light Arrangements.—The gas arrangements for the stage were very important; the method ordinarily adopted (*i.e.*, by means of borders, wing-lights, and float or foot-lights) was perhaps the best. The foot-lights at the Alexandra were somewhat novel, and were devised by Mr. Salomons, and carried out and patented by Messrs. Defries. A channel behind the burners led into a flue built in the wall, which flue drew off the vitiated and heated air; in front were two frames, filled in with coloured glasses, worked by a lever from the prompter's box as the effects might be required. The tops of the burners were on a level with the stage, and the top of the iron box enclosing them was 5in. higher, so that the view was very slightly impeded, and from no part of the house could the flicker of the flames be seen. Besides the gas-lighting, it was very important that the architect should make provision for the lime-light. In the Alexandra Theatre the gas meters were placed in the cellar below the stage—perhaps as convenient a place as could be found. Supply pipes for the two gases were laid out in the usual way, each lantern having india-rubber tubes to attach to the supply-pipes. A work-room, with forge, should be supplied for the gas-man; in the Alexandra this was on the cellar-floor level. It would be very desirable to light all the gas by electricity, as a saving of gas would be effected, and a great source of danger from fire averted.

Heating and Ventilation. — The Alexandra Theatre is heated by hot-air, which Mr. Salomons preferred to hot-water, as he considered it was more rapid in its effects, and that the currents were more easily regulated. It was only necessary to heat a theatre for a short time before the audience assembled; the people and the gas kept it warm enough afterwards. The usual way of abstracting the vitiated air in a theatre was by a large ventilating shaft over the chandelier or sun-burner. This arrangement undoubtedly effectually drew away a great amount of foul air, but after the audience had assembled some time, the moment the curtain was raised a large volume of comparatively cool air found its way from the stage, and naturally flowed towards the centre light, and was at once carried off and to a great extent wasted. Some penetrated under the boxes, and caused eddies and currents, but these were currents of foul air, as there was no regular current from the different circles. Mr. Salomons, therefore, in the Alexandra Theatre, closed the shaft above the sunlight, so that the fresh air from the stage and the other channels provided for its admission flowed at once to the different circles, at the back of which he provided outlets into flues which, above the ceiling, went into the great shaft above the sunlight, thus utilising the heating power generated. The result had been very satisfactory.

Water Supply.—Great care should be taken to allow for an ample supply of water, and for a proper system of stand-pipes for use in case of fire. The system ordinarily adopted was as perfect as any with which Mr. Salomons was acquainted. It was not difficult to extinguish a fire in a theatre if taken in time, and there were more narrow escapes from fire in theatres than the public were aware of. The prevalent idea that the scenery was very inflammable was an erroneous one: the distemper used was not easily combustible. The liability of a theatre to take fire consisted rather in the quantity of wood used in its construction—not only on the stage, but throughout the house. That on the stage could scarcely be better disposed for catching fire, with its light scantlings and air spaces between. As water was now abundantly used, frequently in scenic effects, it was well to provide a large cistern for an ample immediate supply, and to lay (as had been done at the Alexandra) a drain, with an eye in the centre of the stage to carry away the waste water.

Acoustics.—Fortunately the general form of a theatre was most favourable to the conveyance of sound. It was said that there should be as little raised decoration as possible, so as to allow a free surface for the passage of the sound, and to this the perfection of the acoustic properties of the late Her Majesty's Theatre was in a great measure attributed. Mr. Salomons, however, doubted whether this was the cause, as the whole of the boxes (and the theatre was almost all boxes) were hung with curtains (the worst conductors of sound, quite sufficient to counteract the good effects of the level surfaces of painted ornament (which, by the way, were painted on canvas—a non-conducting medium). Mr. Salomons attributed the acoustic perfection of the theatre to its form, and to the box-fronts, &c., being made of wood.

Decorations.—The author said that he was greatly in favour of raised decorations. In his opinion no similarly rich effect could be attained by any painting, however good; and if the painting were not of the very first-class character (which was most difficult to obtain, and when obtained was very expensive) it had a tawdry effect, and resembled ordinary paper-hanging ornament. In the Alexandra Theatre the panels in the box-fronts were filled in with blue tufted satin, which gave a very rich effect, and was not expensive.

In his concluding remarks, Mr. Salomons quoted the following from a letter written in 1867 by Mr. John Oxenford, the *Times*' theatrical critic, qualifying it with the remark that he had never been in America, nor had he ever seen any drawing of an American theatre:—"With the exception of the Bowery, the New York theatres, considered as edifices, furnish models which the London architect would do well to imitate, as they are light, commodions, and so arranged as to allow nearly th whole of the audience a good view of the stage The theatres in London that mostly resemble then are Astley's in its present condition, and the smal house at Highbury Barn. But a far better imitation—one, indeed, that exceeds the originals—is th Alexandra Theatre, Liverpool, in which the likenes of the American houses is qualified by gorgeou appointments, scarcely to be matched anywhere."

A brief discussion ensued, in which Messr Hansard, Horace Jones, Anderson, Gilbert, Pher Spiers, Phipps, and Wiltshire took part, and th customary thanks to the author for his paper havin been unanimously tendered, the meeting was ma a special one of members only, for the consideration of a proposed scheme (which will be found on page 222) for an annual conference of architects, to be held at the Institute.

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BREAKWATERS.

THE whole construction of breakwaters turns upon the theory of waves, says a writer in the *Mechanics' Magazine*. If their action be not thoroughly understood and its effects provided for in a scientific and skilful manner, the strongest and most solid description of work will yield in course of time to the never-ceasing attacks of the water. A breakwater, as the name implies, is a structure designed to arrest or break the force of waves. It may be either of a temporary or permanent character, stationary or movable, and may be constructed of timber, stone, iron, and many other materials. Natural breakwaters exist in abundance, and are the results of long-continued aqueous action. They generally owe their origin to the gradual undermining of lofty cliffs by the sea. Little by little the *debris* accumulates until it rises above the surface of the water, and then constitutes a natural rampart, and serves as a protection against the further disintegration of the parent rock from which it sprung. Breakwaters are frequently constructed expressly for the purpose of sheltering exposed coasts and preventing the inevitable encroachments which the sea would certainly make but for the artificial precautions adopted. It is well known that whole villages have been gradually encroached upon by the sea, and ultimately engulfed. This is especially remarkable on the eastern shores of our country.

Solid breakwaters which oppose a direct resistance to the force of the waves are during storms subjected to great violence. The maximum altitude of waves in these instances may be assumed equal to 20 ft., which exert a force upon the breakwater equal to the hydrostatic pressure of a column of water of that height. It is easy, on this assumption, to calculate the minimum thickness to be given to the stonework. In his "Principles of Geology" Sir Charles Lyell quotes an example of the remarkable force of waves—a mass of rock, equal to ,300 cubic feet, and weighing about 28 tons, was transported to a distance of nearly 90ft. The ancients were well acquainted with the tremendous effort which waves are capable of exerting, and were in the habit of using enormous stones in their works for sea defences. Josephus mentions that Herod laid the foundations of a marine engineering work with stones containing over 4,000 cubic feet, complete monoliths, in fact. While there is no doubt an advantage in the size of the stones, yet it must not be forgotten that in the present day we have attained to a degree of science and skill in construction which enables us to dispense in some measure with mere size and weight. These last-mentioned features were essential to construction in the barbarous ages; nevertheless, if there is one class of engineering works more than another in which large stones are of value it is that connected with sea defences. When large stones are not to be procured the proper step is to bind those that are used so consistently together that they act as one mass. This was accomplished by Smeaton in the Eddystone Lighthouse. All the stones are so intimately dovetailed, joggled, dowelled, and cramped together that it is impossible for any one to move in the slightest degree independently of its neighbours. The whole structure must yield together, if it yield at all. It cannot be destroyed in detail. It resists the forces that for more than eighty years have been incessantly endeavouring to destroy it by its entirety, and not by the strength of any of its component parts. As with a lighthouse, so with a solid breakwater. The stones of the latter should be sufficiently large and sufficiently well bound together to act as one mass. Sometimes, in spite of all precautions, accidents will occur. During a tremendous storm about thirty years ago some of the largest blocks in the Plymouth breakwater were uprooted and thrown bodily into the water. They were not loose unbedded stones, but cut and squared blocks, thoroughly bonded together in cement, and made as solid as possible. Whatever may be the particular direction of the force of the wave, whether vertical or horizontal, or both, it is merely a question of so much weight or pressure. Obviously, therefore, a certain weight of material must be provided in order to afford an adequate resistance to the action of the water. If this weight cannot be obtained in separate parts of the structure, that is, in each individual stone, it must be ensured *en masse*. Although there is a good deal of information extant upon the altitude, weight, and pressure of waves, there is still great want of a series of accurate reliable experiments made at different times of the year and in different localities.

Having briefly noticed the solid type of breakwater, we may now glance at the other, in which, instead of the principle of direct resistance being adopted, that of the reverse is made use of. Instead of defying and withstanding the force of the waves, the other method consists in yielding to it, and allowing it to gradually spend its fury by being divided, or broken up, as it were, so that it becomes quite harmless when it arrives to landward of the breakwater. This may be effected by a stationary iron breakwater, but is infinitely better accomplished by a floating one. Patents have been taken out for floating breakwaters many years ago, but as yet little or nothing has been done with them. One of the reasons, probably, is that timber was the material selected, and another that the true principle was not hit upon. The great point to be ensured is the gradual but complete disintegration, so to speak, of the wave. It should be literally cut to pieces by the breakwater, and deprived of every atom of violence it possessed when first coming in contact with it. This is what is well accomplished in Saunders's breakwater, in which wrought iron is the material employed, and the necessary strength obtained by a scientific system of bracing. A great, but at the same time unfounded, objection against floating breakwaters is that they break away from their moorings. Many engineers of undoubted attainments share in this opinion. It is possible that they may not have seen a good design of a floating breakwater properly moored. The fact is that it is not the mooring that has to be attended to, but the design and construction of the breakwater itself. It may at first sight appear somewhat odd that if the "Great Eastern" can be held at her moorings any question could arise about holding a floating body, weighing in separate sections about 60 tons. But the cases are not analogous. A ship always rides at her anchors "end on." A floating breakwater must ride broadside on. It depends altogether on the construction whether it can do this or not. It is needless to point out the great importance that attaches itself to the subject of floating breakwaters. Both at home and abroad there is abundant scope for them. There are, comparatively speaking, very few localities in which the large outlay required to construct a solid breakwater of masonry can be incurred. Consequently, these places are unprovided with any such protection, and it is no wonder that their trade suffers terribly in consequence. A floating breakwater supplies all the accommodation given by a fixed permanent structure at about a tenth of the cost, and can, moreover, be used temporarily at different stations, as might be required.

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THE "CRITERION" COMPETITION.

IT is a question whether Her Majesty's Commissioners of Woods and Forests are right or justified in letting the property for the erection of such a description of building, nominally a restauraut; yet with its music and dancing-saloons, supper-rooms, &c., it will no doubt bear out the character peculiar to the locality. It will be a central attraction of "gay life," and like all such places, pay in proportion to the profligacy of its patrons. If the licensing magistrates keep in their present rigorous humour, there will be a constant liability of the place losing its licences and "shutting up." This, of course, may not take place under the management of Messrs. Spiers and Pond, but subsequently. Is such questionable property desirable on the ground? If it fails as a Haymarket house, it could not well be turned into anything else. So much for the lessors. As to the lessees, will the undertaking pay? If they could have obtained their requirements at the price stipulated at first, £20,000, not a doubt but it would. I pointed out in your journal when the competition was first made known the insufficiency of the sum, and the amount was increased by £5,000, but this is not enough. I was present when one of the successful designs was "cubed up," and at a shilling per foot, a very low price for such work, it came to over £60,000. The cubical area is very great, the foundations being 30 ft. or 40 ft. underground. If to this £60,000 you add £10,000 for fixtures, furniture, &c., with cost of site and indemnification to neighbours for injured lights, &c., the whole cost would be beyond £100,000. If Messrs. Spiers and Pond have not such a sum at command, I do not see how the undertaking can be carried out. If they have, are they wise in embarking in such a venture? As regards the competitors, the matter does not look hopeful. They have each probably spent £100 at least on their several sets of drawings, and have but little to expect, inasmuch as, according to the conditions, Messrs. Spiers and Pond bear no responsibility if the designs cannot be carried out for the stipulated sum, and it is certain that not one of them can. The competition has been an interesting one, and the drawings well got up, but there seems much cause to fear that, after all, the whole thing will come to naught.

P. E. M.

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THE COMPLETION OF S. PAUL'S.

MR. ALBERT HARTSHORNE, in a letter to the *Standard*, writes as follows:—"It appears, from a paragraph in the daily papers of the 15th instant, that the committee for the completion of S. Paul's Cathedral have again met, and decided upon a fresh scheme for rearranging the plan. If this scheme were likely to be final, and generally accepted as satisfactory, it would be a subject for congratulation, but the new arrangement seems to be as little suited for practical use as the present, and is at the same time needlessly destructive, involving, as it does, the obliteration of certain features in the building which command our highest respect. I believe I shall not be considered too conservative in pleading for the restoration of Sir Christopher Wren's choir to its first position, and the retention of Father Smith's organ for its original purpose; and it is sufficiently apparent that while the proposed scheme will alter those objects, and give us nothing of a really serviceable nature in their stead, the most defective point in the design of the cathedral will be emphasised, and the idea of the great architect in no way carried out. It is generally acknowledged amongst architectural critics that not only is the use of the dome, as a mere ante-chamber to the choir, an absurdity, but that the arch connecting those parts of the cathedral is of very insignificant proportions, and much too narrow; how much more apparent will this become when the choir is more closely connected with the dome, and the arch contracted in width by the erection of a large organ-case on either side? It can scarcely be doubted that the effect from the nave will be far from satisfactory, and it is no source of gratification to think that the identity of Father Smith's organ will be lost, as it is to form but a portion of one of the musical monsters of the present day. I should not have ventured thus hastily to comment upon the proposed scheme, but that, firstly, the committee, in deciding to begin their alterations at Easter, seem to have forgotten the promise made in their appeal, that whatever scheme were adopted should be publicly exhibited by means of drawings and models before anything was actually begun; and, secondly, that there has recently come under the notice of the public a suggestion for an arrangement which not only preserves the original choir intact, but proposes such an arrangement as would be most agreeable to the original intentions of Sir Christopher Wren, and appears at the same time to be well suited to the requirements of the present day. The scheme to which I refer is the joint production of Mr. J. T. Micklethewaite, F.S.A., and Mr. Somers Clarke, and is published in the first number of the *Sacristy*, a new quarterly, devoted to the subject of ecclesiastical art. Here it is proposed to leave the original choir untouched, using it for daily services, and to place under the eastern arch of the dome an altar surmounted by a baldachin, with an enclosed choir in front, of sufficient size to contain the clergy and choristers. This would enable the dome to be really used for congregational purposes, and as is shown by the first drawings for the cathedral, now preserved in the library of All Souls' College, Oxford, to have been the original wish of the architect. There are many other points in these suggestions which would be well worthy of the attention of the committee, and I venture to hope that by your powerful aid they may be induced to reconsider their scheme, which is, in fact, but a slight improvement upon the present plan, and leaves the great burden of the work, which must eventually be done, to our successors."

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CLEVELAND INSTITUTION OF ENGINEERS.—At the fourth meeting of the present session of this Institution, the election of the following new members was announced:—Messrs. James Jennings, Exchange-place, Middlesborough; George Dove, jun., Cargo Fleet Ironworks, Middlesborough; B. Jones, Clay-lane Ironworks, Middlesborough; R. C. Denton, J. P. Denton, jun. (Denton, Gray, and Co.), West Hartlepool; and E. Robson, Newlands, Middlesborough.

SECOND REPORT OF THE ROYAL SANITARY COMMISSION.

IT was in the reign of George II. that the more populous and wealthy towns of this country began to apply to Parliament for special legislation; and very numerous special Acts have been passed between that date and the present time for conferring on populous places powers of local government, the earlier Acts having reference chiefly to paving, lighting, cleansing, and improving the districts embraced in them, and in the later instances recognising the importance of sanitary regulations, and affecting to make provisions accordingly; but until lately no general measure applicable to the whole kingdom provided for the health and comfort of the people.

The three outbreaks of cholera which ensued on the gathering together of large numbers of people in the confined areas of towns led to investigations as to the means of preventing or mitigating infectious diseases, and so drew attention to the fact that the seats of endemic disease are generally where the air or water is polluted. Crowded parts of towns, and the courses of rivers fouled by refuse, were observed to be the chief resort of the epidemic. High, open, and dry situations were not attacked. The dense mass of working people brought together by the rapid growth of manufacturing, mining, and commercial industry had presented sanitary difficulties of such unprecedented magnitude as to be at once novelties and puzzles for legislative treatment.

In 1835 the Municipal Corporations Act was passed, and in 1836 a Registrar-General of Births, Deaths, and Marriages was appointed, and in 1839 his first report exhibited in a general survey the increasing amount and the causes of excessive mortality in towns. In 1840 a select committee of the House of Commons reported that they recommended acts to be passed for the better regulation of buildings and construction of sewers, and for the appointment of local boards of health and inspectors, and drew attention to the evils of interments in populous cities, the importance of water supply, the want of open spaces in crowded cities, the necessity of supervision over common lodging-houses, and the advantages which would result from the establishment of public baths.

Mr. Chadwick reported in 1842 on the result of the above-mentioned inquiry, and gave such elaborate evidence of the unsatisfactory sanitary condition of the labouring population that in 1843 Sir Robert Peel issued a Royal Commission to inquire into the state of large towns and populous districts, directing them to inquire specially into the causes of prevalent disease, and to report as to the best means of improving the public health by existing laws giving powers of drainage, water supply, and building regulations. This evidence traced in fifty towns an excessive mortality to defective drainage and other causes capable of removal. The then existing law prohibited the connection of house-drains with the main sewers, which were laid down only for surface water.

In 1846 was passed the first of a series of acts for the removal of nuisances, and in 1847 the Towns Improvement Clauses Act was passed, and its provisions have been adopted in nearly all subsequent local Acts. In order to facilitate the adoption of this and former Acts by local authorities, its provisions, and some of those of former Acts, were collated, amended, and extended in the Act constituting the General Board of Health in 1848, by adopting which local communities were enabled to obtain by a simple process powers which they could not previously obtain except by a local Act incorporating sections of the Towns Improvement Clauses Act. This Act of 1848 empowered the construction or management of sewers and drains, wells, pumps, water and gas works, water-closets, slaughter-houses, paving, regulating streets, dwellings, common lodging-houses, cellars, &c., and a cheap and easy mode of procuring the amendment or repeal of local Acts by the machinery of provisional orders was now introduced.

Towns now began to carry out large works for their own sewerage and drainage, taking the rivers on which most of them had been situated for water supply as the means of discharging what they simply looked upon as refuse, regardless of the loss to themselves of pure water, of the waste of sewage, and of the injury to the inhabitants of the valleys through which these poisoned rivers were afterwards to flow. Thus men and cattle suffered from drinking a polluted stream which should have afforded a pure supply to both town and country, whilst the towns were throwing to waste that which should have been employed as manure by the country.

In 1858 the General Board of Health expired, and the Local Government Act was instituted, and took effect in all places where the Act of 1848 was then in force, and this Act, which is to be construed with that of 1848, constitutes the principal sanitary legislation now on the statute-book. Amendments of this Act followed in 1861 and 1863, and in 1865 the first Sewage Utilisation Act was passed, enabling local authorities to make arrangements for its application to agricultural purposes. Then in 1866 the Sanitary Act amended the last-named Act, and gave power to sewer authorities to form special drainage districts, and the 49th section authorised the Secretary of State, in case of default of the local authorities, to proceed—first, by calling on the defaulting authority to remedy its omission, and in the event of continuing default to perform the neglected duty at the expense of the district. The powers of this Act were extended in 1868, and again in 1870. Notwithstanding this wide application of sanitary statutes, there are still many places with very defective sanitary government, and still more with practically none at all, owing to the defective exercise of the powers which the law confers.

In the second part of the Report of the Royal Sanitary Commission, under the head of "Observations," the Commissioners remark that more active and effective sanitary local government is necessary for the well-being of this country, and that that is clear from the comparative condition of places which have, and those which have not, exercised their powers. The former, for the most part, have carried out, or are carrying out, works of sewerage, cleansing, water supply, and other requirements of public health, and with great sanitary results; while the latter are frequently tolerating a state of things which is productive, to a large extent, of sickness and mortality.

Many causes of disease are preventible; and much chronic weakness and incapacity for work are the result of sanitary negligence and want of the ordinary requisites of civilised life. A large proportion of the population is habitually drinking polluted water. In many places accumulations of filth are widely vitiating the air. A considerable portion of the working classes is debilitated and thrown into sickness and poverty by a tainted atmosphere and unhealthy dwellings, and no classes are exempt from those evils.

The Commissioners do not in any way propose to alter the established system of local self-government, but to increase its action by the supervision of a central authority, who shall see that the powers conferred on the local authorities and intended to be by them carried out, are actually carried out, and not evaded under one pretence or other, as they now too often are. The whole country has a voice in making the laws, and when made the Commissioners seem to consider that they ought to be carried out. They say that "Other nations can show simpler plans of administration. Arbitrary government furnishes examples of simpler plans, more uniform practice, and more systematic codification of law. Its machinery is naturally more perfect, though the working may often seem less effective, than that of the local government of which we have experience. It would constitute perfection to combine with the economy and efficiency of systematic organisation the energy and interest of distributed administration."

The Commissioners treat of the manner in which the country is divided into parishes, union districts, counties, &c. A parish is the unit of area. Unions are aggregates of parishes. Counties, however, from their difference of origin, are not exact aggregates of parishes, some parishes being in more than one county.

They contemplate a new statute, and say that "If the subject of our inquiry were a new country, without territorial divisions or authorities, it would be necessary to settle the administrative areas before creating authorities to have jurisdiction within them; but in an old country, possessing authorities already too many and complex, the first consideration must be given to those which exist, and to the question whether any of them appear to be such as can be intrusted with the execution of an amended law. The town councils in corporate towns, and the local boards created under the Acts of 1848 and 1858, at once present themselves as representative bodies, which have fairly discharged many of the duties prescribed by existing statutes. They should, therefore, act within their respective districts under the new consolidated statute which we shall recommend."

The report emphatically condemns vestries; it is said that the powers given to them under the Sewage Utilisation Acts as sewer authorities have been productive of little but disappointment, and there is no reason to hope that new and amended powers would be more efficiently exercised than the old.

Outside of the districts of already constituted boards or of town councils, the commissioners consider the boards of guardians to be the most appropriate bodies to become the sanitary authorities. They possess the following recommendations:—

(1.) They are representative.

(2.) They exist everywhere.

(3.) They have a complete organisation in their offices, and a staff of executive officers, with a clerk for correspondence and advice.

(4.) Through their medical officers, they possess a knowledge of the state of disease in the unions, which has an important bearing on the work devolving on the sanitary authority.

(5.) It is found practically, both in the central department and in the local administration, that communications on sanitary questions are continually passing between the poor-law and the sanitary authorities where the latter do their duty.

(6.) Within limits which experience alone can define, and which will vary according to the circumstances of individual cases, the same staff may render assistance in both services.

In the areas thrown under the jurisdiction of the guardians there will be many districts which, from situation, population, or other circumstances, ought to have their own Government, and to manage their own affairs by means of a board elected by themselves. The new statute should enact that these districts shall either be constituted by the new statute on a basis of population, or by the central authority on petition of the people of the district, or as may be determined. "There may be districts which, although not ripe for an elective board, either have so far changed their character, or are on the point of undergoing such transformation, that the more rigid laws of the urban powers are necessary for their continued well-being. It is possible that some manufacturing establishment is to be undertaken, or that some new source of mineral wealth will shortly be developed. Unless measures be taken, an ill-built and undrained manufacturing or mining village or group of villages will cover what are now agricultural lands. Meanwhile, the materials for a local board may yet have not been collected, but the necessity for urban powers to regulate the plan of the future town is abundantly manifest. Those who have witnessed the rapid growth of such a community testify to the fatal consequences of neglect at this stage. In many instances the difficulties are greatly increased by the temporary nature of the future settlement. The mineral harvest is quickly gathered, and the population vanishes with the exhaustion of the treasure which attracted it. There is, therefore, little inducement to erect houses of a permanent character." The difficulty seems to us to lie in judging correctly on the first establishment of any such community, whether it will certainly be a temporary one or whether it will become permanent, either by the development of the industry that brought it together, or by some cognate one or more growing out of the first. In the latter case it would be proper to insist on buildings being of a permanent character, but in the former it might not be so. Whether it is to be hoped for that the members of any local board will be able to arrive at anything like a sound judgment on this subject we know not.

After suggesting that districts may combine for limited purposes or be united for all purposes, the subject of urban areas is discussed:—"There are cases where incorporation rather than combination has become desirable from the growth of a new population outside of an urban district. Such populations derive benefit from the improved administration of the adjoining district, and are possibly in the closest relations with it, forming, in fact, a portion of the community. Yet they do not share in the burdens which those improvements have created. On the other hand, they enjoy exemptions which, though mischievous, are not unpopular. Within the district perhaps building bye-laws are rigid; without it they do not exist. Within the district vigilant officers enforce the laws of health; without it the action of a remote board of guardians may be comparatively little felt. When these evils have reached their height we find that the difficulties of incorporation, and the reluctance to grapple with them, have been the most serious."

As to a central authority, it seems that there are already several. Sometimes questions are referred to the Local Government Act Department of the Home Office; sometimes to the Privy Council; and sometimes to the Board of Trade; and the Commissioners take into consideration the defects and desirable alterations of the present aggregate central authority. However local the administration of affairs, they report that a central authority will, nevertheless, be always necessary in order to keep the local executive everywhere in action; to aid it when higher skill or information is needed; and to carry out numerous functions of central superintendence. "There should be one recognised and sufficiently powerful minister, not to centralise administration, but, on the contrary, to set local life in motion—a real motive power, and an authority to be referred to for guidance and assistance by all the sanitary authorities for local government throughout the country. Great is the *vis inertiæ* to be overcome, the repugnance to self-taxation, the practical distrust of science, and the number of persons interested in offending against sanitary laws, even amongst those who constitute chiefly the local authorities to enforce them."

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The Widening of Park Lane.—The long-talked-of, long-impeded improvement of Park-lane is now being carried out. The houses in Hamilton-place are being rapidly demolished. It was stated some time ago that the lease of Gloucester House, the residence of the Duke of Cambridge, was valued at £20,000.

The Iron and Steel Institute.—This Insttute announces that its annual general meeting will be held at Willis's Rooms, St. James's, on the 28th, 29th, and 30th of this month, under the presidency of Mr. Henry Bessemer. Numerous papers on iron and steel manufacture will be read, and the meeting is expected to be of more than usual interest.

THE FORTHCOMING INTERNATIONAL EXHIBITION OF 1871.

THE bright spring weather we are now enjoying and the lengthening days insensibly remind us of the various treats promised us during the coming season, and one of them will surely be those collections to be opened in May at the first ANNUAL International Exhibition, an exhibition, that is to say, which (unlike its fore-runners), is to repeat itself every year. The exterior of the exhibition buildings, which are faced with red brick and terra-cotta, has been making great progress during the last month, and the public feel a somewhat natural curiosity to learn if the interior proceeds with equally rapid steps; but, alas! during that mysterious period when the arrangement of the pictures, sculpture, and other branches of the fine arts which are to be shown, is going on, the public and the press are alike rigorously excluded. Nevertheless, we shall endeavour to impart to our readers the information we have been able to gather on the subject, and strive at least to do away with a little of the vagueness that seems to pervade everybody's mind upon this subject.

The picture galleries of the exhibition, extending along the east and west sides of the Horticultural Gardens, join the Royal Albert Hall by means of a glazed corridor. The English gallery is on the west side of the gardens, parallel with Queen's-gate. Underneath this gallery that section of the exhibition devoted to machinery in motion will find at a place. The opposite picture gallery is devoted to foreign exhibitors, and, in the rooms underneath, the various collections of pottery, to which the great firms of Minton, Copeland, and Wedgwood will be large contributors, will find room. The English gallery is approached by a handsome double flight of stairs, and consists of two galleries, each 150 feet long; a third gallery, to be devoted to water-colour paintings, 120 feet long, and two smaller rooms, each 60 feet in length. These two rooms will be used for the display of architectural drawings and certain selected articles of a decorative character, such as furniture, mosaics, and goldsmiths' work. The floors of the gallery are of encaustic tiles; the walls are coloured a pale sage green, of similar hue to that used in the South Kensington Museum. In lieu of double glazing, blinds of unbleached calico, stencilled over with a small pattern in bistre, are hung across the skylights. These blinds will prevent an excess of sunlight or glare from reaching the pictures. Blinds exactly the same as these were used at the Paris Exhibition of 1867, and found to answer extremely well. The staircases and approaches to the gallery have been painted a deep purple brown colour, to form a good background for the statuary, and to facilitate the display of stained glass, which is always supposed to show to advantage in a dimly-lighted yet richly-coloured room. The Exhibition is heated by hot-water pipes, conducted in channels transversely across the galleries.

Some of the foreigners are hanging their pictures over here; others, among whom are the Belgians, who, having had the exact size of their allotted space, and other necessary measurements sent over to them, have had the places of their pictures arranged in their own country, and now it only remains to carry out this previous arrangement over here, a work which can be done easily by any ordinary mechanics. We understand the sculpture is to be placed down the centres of all the galleries, a method which can only be justified by want of space, as it is deteriorating to both pictures and statuary. We hear that it is probable that many artists, as yet little known to fame, will have an opportunity of showing their talents to the world by means of this Exhibition—that the Exhibition, in fact, is strong in "outsiders," and besides this that many works already public favourites, will be displayed. Among the latter is Mr. Millais' beautiful picture, called "The Sisters," in the possession of Mr. Matthew. Though we regret that this is the only work by which this popular artist will be here represented, yet it is one of his happiest conceptions, and will undoubtedly greatly aid in carrying down his fame to posterity. It contains the portraits of the painter's three children. The colouring is fresh, brilliant, and powerful, and the grouping, though done with extreme simplicity, is the work of a master's hand. Another picture we shall be unfeignedly glad to see again is "Philomela,' by Mr. Poole, R.A., exquisite in feeling, and full of tender poetry. Mr. W. Linnell sends "Aurora in Romagna," a large work painted by him during his residence in Rome, and exhibited two years ago at the Royal Academy. Mr. Leighton's "Electra at the Tomb of Agamemnon" will also find a place here. Sir Francis Grant sends one of those hunting scenes which first gained him reputation—"A Meet of Sir Richard Sutton's Hounds," painted with great vigour and spirit, and also a full-length portrait of a lady. Mr. Watts will be represented by five or six works. Mr. Armitage sends two large pictures, both previously exhibited, termed "Salome Dancing before Herod," and "Esther's Banquet." Another painting, whereby hangs a sad tale, is "The Return to Whitehall," by the late A. B. Clay. Mr. J. C. Horsley's large picture of "The Prodigal Son," treated in a modern manner, and drawn from rural life; "The Minstrel's Gallery," a picture full of comic humour, by Marks; "Both Puzzled," a red-headed urchin propounding a complicated sum to a most original-looking Irish schoolmaster, by Erskine Nicholl; Mr. Lear's "Corsica," Mr. Thomas Faed's "Emigrants," and other pictures which we have seen before, but have no objection—nay, shall be, on the whole, rather glad to see again—will be placed here, besides, as we have said, numerous fresh productions. Many pictures of inferior importance will be arranged in the refreshment-rooms of the Exhibition, where there is, on the whole, a very tolerable light. The water-colour painters will, we understand, be very strongly represented, and they have had an excellent amount of space allotted to them. The sculpture seems principally to consist of busts and portraits. A curious rather than a beautiful work is that by Mr. John Bell of "A Youth Taking a Header into the Water." Another graceful group is "The Maiden's Secret," by Lawson. Amongst the decorative furniture is found a new process by Brennan, of staining wood so as to appear inlaid. This, though it would be condemned by Mr. Ruskin as a sham, looks very well as a whole in a cabinet so treated. Some of the ornament on it is, however, rather too large. The inlaid Amboyna-wood table, by Jacob, which gained the Society of Art's workman's prize, is to be exhibited here. A wardrobe of delicate gray and dun-coloured woods, by W. and J. R. Hunter, is spoilt by the colour of the ground of the Wedgwood plaques let into it. This ground is of a bright lavender, but should have been of that peculiar shade of green which lovers of this kind of pottery so much admire. A capital piece of workmanship is spoilt by this want of taste. Among the mosaics is a new process of fictile vitrifaction, invented by Minton, whereby the artist paints on the mosaic itself, which has been previously put together. After the painting, the mosaic is broken up into pieces of about a foot square, and fixed. The figure of Ghiberti for the South Kensington Museum, by Fisk, is so treated. We have already mentioned that many unknown men will come before the public by means of this Exhibition, and in due time we shall hope to bring their various merits, and many talented works in all branches of the fine arts, under the notice of our readers.

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Death of Mr. Willement.—We have to record the death of Mr. Willement. In the very early days of the great Mediæval revival in which Pugin and Britton, and Dawson, Turner, and Hartshorne and so many other well-remembered men took part, Willement distinguished himself, according to the *Guardian*, by discovering the fact that stained glass windows should not be "transparencies;" and, working on this principle, he produced many examples of a higher class than any that had been seen since the sixteenth century. His glass has, of course, been superseded, and he will be chiefly remembered for three or four careful little books on "Royal Heraldry," "The Heraldry of Canterbury Cathedral," and "St. George's Chapel," the last of them published in 1843; he had since only written a few memoirs for the learned societies, and a little book on the parish of Daventry, in Kent, where he resided until his death, at the very advanced age of eighty-five.

FIG. 3

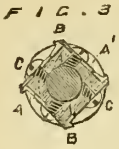


FIG. 1

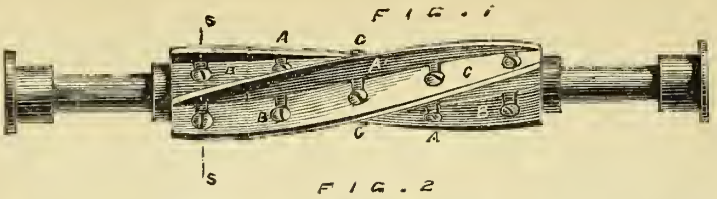


FIG. 2

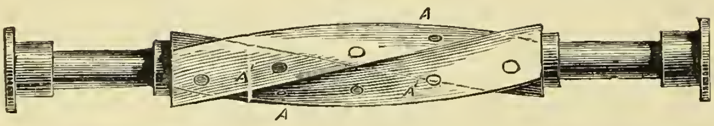
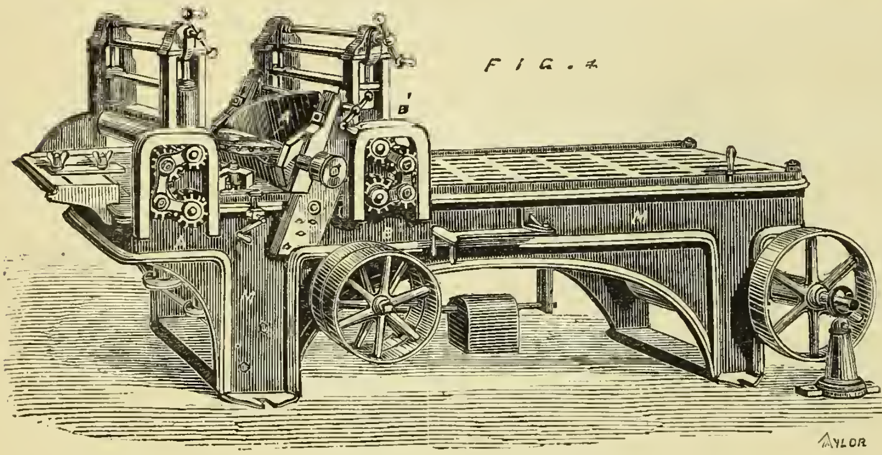


FIG. 4



IMPROVED WOOD-PLANING MACHINE.

An improved method of fixing the cutters of cylindrical wood-planing machines has been patented by Mr. More, of New York, which consists in casting the cutter head with regularly warped or twisted seats on its exterior for the cutters, and the cutters, being shaped to correspond, are secured firmly thereon by bolts, which allow them to be set forward and backward to adjust the depth of cut, as also to provide for their being moved forward by degrees as their edges are ground away. The cutter shaft and its connections are mounted and driven in the ordinary manner.

The obliquity of the knives can be varied, the inventor preferring about the extent of skew represented in the accompanying figures.

Fig. 1 is a general view of the cutter head with the cutter mounted; and Fig. 2 is a general view of the cutter shaft and head alone, without the cutters or their screw bolts; Fig. 3 is a cross section on the line S, S, in Fig. 1; and Fig. 4 is a perspective view, showing the relation of this peculiar cutter head and its adjuncts to the feed rolls and to the other parts of a cylindrical planing machine. Similar letters of reference indicate like parts in all the figures, A representing the head, and A^1 A^1 the warped or twisted surface on which the cutters are screwed; B B are the twisted or warped cutters; and C C are bolts tapped strongly into the material of the head, and standing in slots to allow the cutters to be set forward and backward in order to adjust them properly.

To grind the cutters truly the shaft is temporarily supported in fixed or movable bearings adjacent to the grindstone, the head A and its connections being turned either rapidly or slowly, so as to present all parts of the edges in the right position to the stone. The sides of the cutter are faced by holding them separately on the stone by hand, either before or after, thus producing the proper spiral contour of the edge.

The inventor has had one head with a set of these cutters in successful operation several weeks, and believes that, with a little experience, any mechanic of average intelligence will find no trouble in constructing the parts and in keeping them in good condition. The edge being presented to the wood with a drawing cut causes it to plane smoothly.

The improved cutter-head takes off a larger shaving at a single operation, leaving the wood much smoother than any of the ordinary cutters and cutter heads which the patentee has ever used or seen. The shavings or chips are thrown obliquely to one side.

The inventor proposes to make two kinds of cutters, one right-handed and one left-handed, so as to throw the chips to the right-hand or to the left-hand side of the machine, according as the machine shall chance to be located. In Fig. 4, M represents the general framework of the machine, and B^1 B^2 a pair of feeding rolls driven slowly by proper belts or other connections from the operating power. The feeding mechanism, and also the provisions for raising and lowering the cutter shaft and for adapting the feeding rolls and discharging rolls to operate on thick and thin stuff, and the several other details of the mechanism, may be of the ordinary character necessary for the so-called "Woodworth" or cylindrical planing machine. The machine planes 2ft. wide, and feeds at the rate of 40ft. per minute; and the patentee says he can plane smoothly cross-grained and other wood which could not be planed nearly as smooth with the ordinary cutters; and can take off a half inch at a single cut from a wide board or plank of oak, ash, or walnut. There is no tendency to run the board or other lumber to one side, and an appreciable saving in motive power is obtained by the employment of this machine, an ordinary planer requiring with a common head and cutters about fifteen horse-power, whilst the improved head and cutters only require about eight horse-power under the same conditions, and doing the same, but better, work.

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DESIGN FOR EXCHANGE, BRADFORD.

One of our lithographic illustrations this week represents a competitive design for the Exchange, Bradford. The competition took place some years since, Messrs. Lockwood and Mawson having carried off the prize. We may say that the illustration we now give was engraved several years since, and was put away in mistake by our lithographer with the used subjects.

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CHURCH OF LUBENTIUS AT DIETKIRCHEN.

This illustration was not given last week, as stated in mistake by the printer, but it is given this week. We have no further details to give of the church. It was sketched by a German, M. Paul Tornow, and photo-lithographed by Whiteman and Bass.

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HARBOURS OF REFUGE.

A very old question furnished the House of Commons on Tuesday with a subject for an animated debate. Lord Claude John Hamilton moved an address praying that the recommendations of the Harbours of Refuge Commission of 1858 be carried into effect so far as they relate to the construction of a harbour of refuge at Filey. His motion superficially was a good one. His points were that the east coast is notorious for wrecks, and equally so for the want of harbours. Each year great losses of life and property occur, and therefore the Government could not spend £800,000 to better purpose than in constructing the proposed harbour of refuge. The development of our North Sea fisheries, and the importance of the place itself, from a strategical point of view as a naval station, clearly indicate Filey as the proper place for the construction of the desired harbour. Mr. Chichester Fortescue and Mr. Gladstone, however, thoroughly demonstrated the weakness of the reasons furnished by Lord Claude John Hamilton in favour of his project. As the Premier pointed out, the wrecks, though unfortunately numerous, are not more so than on other coasts, so that Filey has no special claim on the national purse. Moreover, if constructed it is by no means certain that the harbour would diminish the present number of wrecks. A harbour of refuge is not sought by good ships, but is only a premium on bad seamanship. The more our shipping improves, the greater will be the objection shown to entering such harbours, or to contribute by means of tolls to their maintenance. In point of fact, it has been found much better to make loans of moderate amounts to various local bodies in aid of improvements of their respective ports. The House on a division endorsed Mr. Gladstone's view of the matter, and the proposal to draw £800,000, which in all probability would before the work was completed reach a total of two millions, for what would in all likelihood be purely a local improvement, will not be entertained. The policy of the Government is a sound and wise one. It may be, as the *Times* ironically observes, "unworthy of a great nation," but it at any rate secures the end of view, and preserves us from many pieces of foolish extravagance.

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PROPOSED ANNUAL CONFERENCE OF ARCHITECTS AT THE INSTITUTE.

The following report of the Committee appointed by the Institute to re-consider the scheme for an annual conference of architects at the Institute was discussed at a special general meeting of Members only on Monday evening last, and was, we hear, adopted as to its main features:—

That the conference be held during the last week in May: *i.e.* (for the current year) on Monday, the 22nd of May, and the two following days.

That the President of the Institute shall preside.

That papers shall be read and discussions promoted on the plan adopted at other annual gatherings of the same kind.

That minutes of the conference shall be kept by the Institute, and that the proceedings shall be published.

That the time be allotted as follows, but subject to redistribution:—

1st day—Monday. 1 p.m., general opening meeting; a brief presidential address to be read and discussed. 8 p.m., ordinary general meeting of the Institute.

2nd day—Tuesday. 1 p.m., professional practice and education. 8 p.m., archæology and art.

3rd day—Wednesday. 1 p.m., construction and science. 7 p.m., public dinner, at which the President will briefly review the proceedings.

N.B.—Supplementary meetings to be held on Thursday by adjournment, if required.

That all persons attending the conference, unless by special invitation, shall be practising architects.

That each architectural society in the United Kingdom be invited to send a delegate to represent it officially at the conference, and that other members of such society, being practising architects, be invited to attend the conference in their private capacity.

That due notice be given of the subjects proposed for discussion.

That the invitation of foreign architects be left to the Council of the Institute.

That public notice be given of the conference by advertisements, so that persons desirous of being present may apply by letter, either to the secretaries of the Institute or to the secretaries of local societies, for cards of admission.

That an exhibition of practical drawings (unframed) be held during the conference.

That two honorary secretaries be appointed to superintend the arrangements necessary for each subject or section, viz.:—

Professional Practice and Education .	Fellow. Associate.
Archæology and Art	Fellow. Associate.
Construction and Science . . .	Fellow. Associate.
Practical Drawing	Fellow. Associate.
Dinner Arrangements	Fellow. Associate.

That such of the hon. secretaries of the conference as are not yet members of this Committee be requested to serve on it, and that the President and Vice-Presidents be also appointed, *ex officio*.

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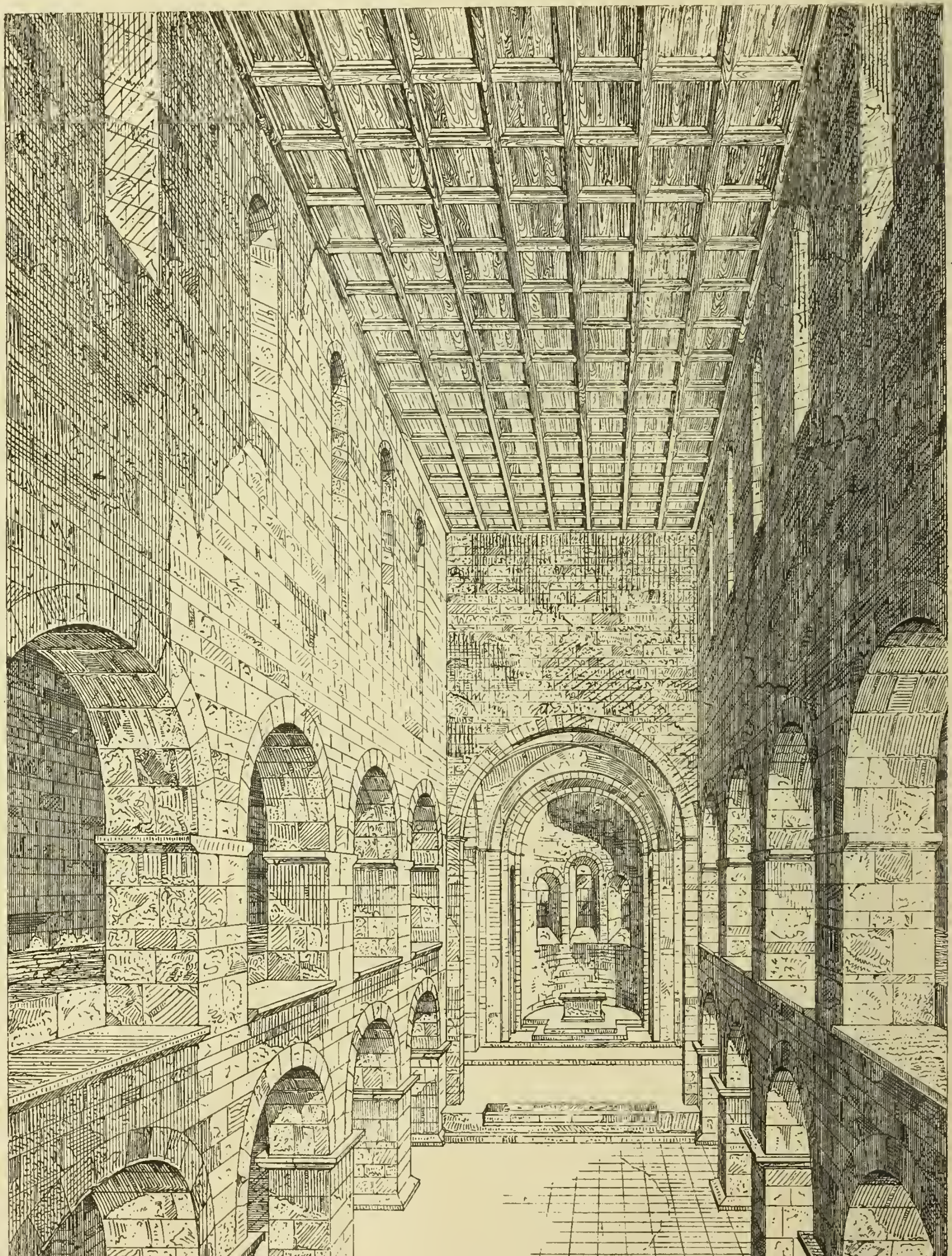
Technical Instruction in Rome.—A Roman correspondent speaks of an interesting exhibition of drawings, which always takes place at this time of the year:—"In every Rione of Rome, there is a night school for apprentices and young working men of the poorer class, which is open throughout the year free from any sort of charge, where many a persevering lad acquires a useful education, not only in the model branches of study necessary for his position in life, but in geometry and design, affording him so great an advantage in many trades. Many who are now well-to-do tradesmen received here the first knowledge of their art; what is most remarkable about these schools is that they proceed entirely on the principle of mutual help, so that though the rooms, the lighting, and such like expenses, are provided by the Pope, all the masters render their services gratuitously." The exhibition he refers to consists of works executed by the pupils of these night schools.

SUPPLEMENT TO THE BUILDING NEWS MAR 24th 1871.



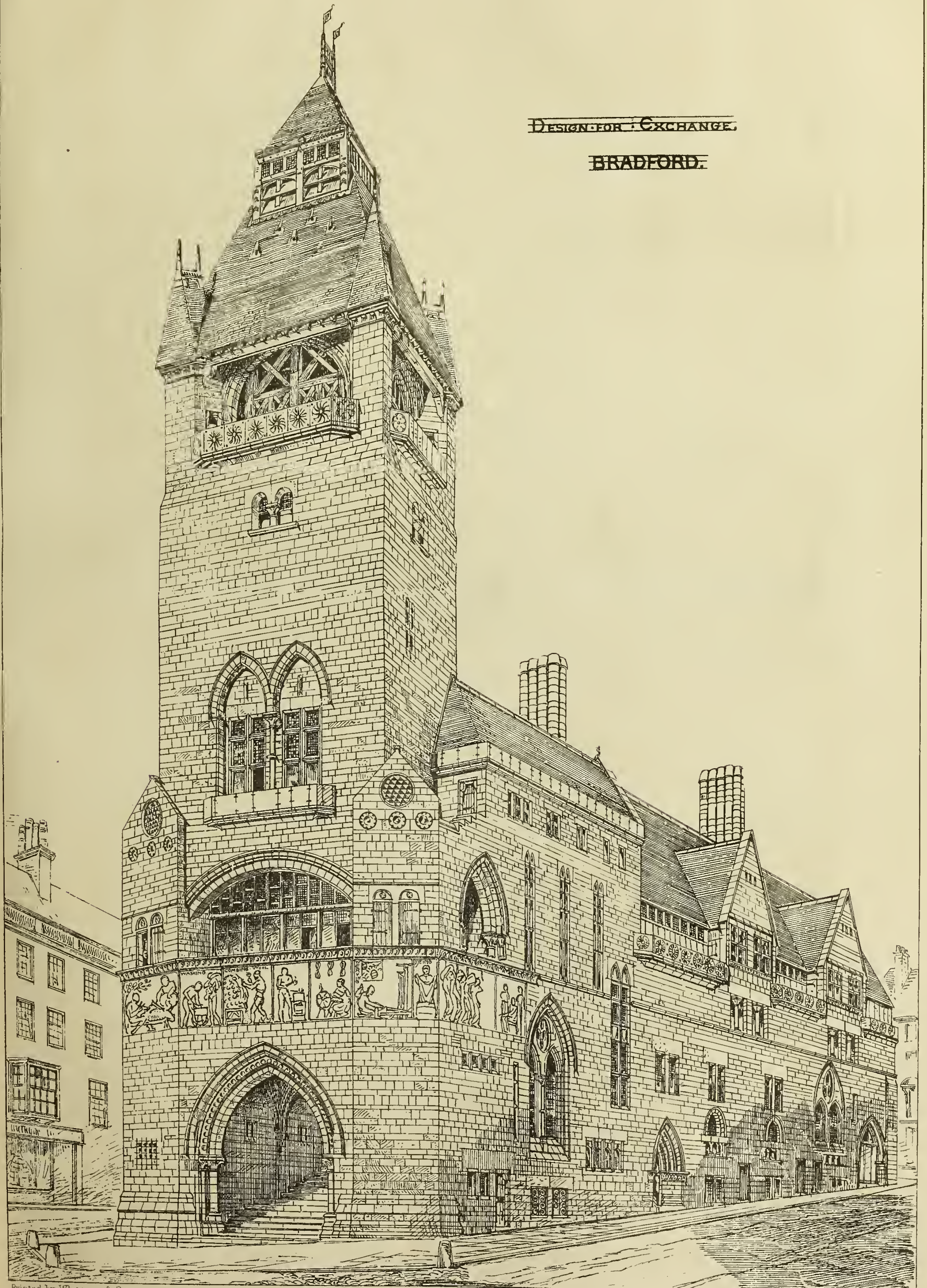
Interior of St Lubentius church at Dietkirchen on Lahn

Photo-Lithographed by Whiteman & Bass London

Supplement to the Building News Mar 24th 1871.

DESIGN FOR EXCHANGE,

BRADFORD.



Printed by Whiteman & Bass

PROPOSED CORPORATE BUILDINGS, BIRMINGHAM.

A GOOD many years have passed away since the Corporation of Birmingham purchased a site on which it was intended at some future period to build law courts, judges' lodgings, and a complete set of offices for the transaction of the business of the Corporation. The subject has been very often discussed in the Town Council, but until last year the advocates of the proposed buildings have always found themselves in the minority. The propriety of immediately advertising for designs has frequently been debated, but the advocates of progress, as they might perhaps describe themselves, did not succeed in carrying their motion until last summer, and then only by one vote. However, this one vote decided the question, and premiums were offered, and instructions issued, after the regulation manner.

In answer to the invitation, twenty-nine sets of designs have been sent in. Mr. Alfred Waterhouse has been asked to report upon them to the Committee, and he has been for some time in Birmingham, examining the various drawings. We should say he has found the task exceedingly distasteful, for surely a poorer set of designs for a great public building have never been gathered together. They are now placed in the Town Hall, and are so hung that they can be well and easily seen. Numbers have been affixed to them, but unfortunately not with any regularity, and some of them have escaped altogether. We give them, however, just as they appear on the drawings, and also a list of the mottos distinguishing the various designs.

Twelve of these are more or less Classic, and seventeen are in a style which may, perhaps, be considered as Gothic.

The following is a list of the whole, as at present arranged :—

No. 1. "Vera."—6 drawings; Classic (perhaps meant for Elizabethan).
No. 2. "Et juste et vrai."—12 drawings; Classic.
No. 3. "Ex pede Herculem." — 8 drawings; Classic.
No. 4. Arms of Birmingham. — 6 drawings; Classic.
No. 5. Knight in Armour. — 12 drawings; Gothic.
No. 6. "Suum Cuique."—4 drawings; Gothic.
No. 7. "Pallas Athena."—13 drawings; Classic.
No. 8. "Let There be Light."—8 drawings; Classic.
No. 8 (*a*). "Nous Verrons."—9 drawings; Gothic.
No. 9. (No motto of any kind.)—9 drawings; Classic.
No. 10. "Forward."—11 drawings; Gothic.
No. 11. "Q."—6 drawings; Gothic.
No. 12. "Desideratum."—8 drawings; Classic.
No. 13. Bell and Compasses. — 8 drawings; Gothic.
No. 14. "En Avant."—6 drawings; Gothic.
No. 15. "In Uno."—8 drawings; Classic.
No. 16. "Town Hall."—10 drawings; Gothic.
No. 17. "Perseverantia."—12 drawings; Classic.
No. 18. Apparently missed out.
No. 19. T-Square—12 drawings; Gothic.
No. 20. "Alpha."—8 drawings; Gothic.
No. 21. "Quod erat faciendum."—12 drawings; Classic.
No. 22. "Si je puis."—10 drawings; Gothic.
No. 23. "Fidelitas."—9 drawings; Gothic.
No. 24. "Palmam qui Meruit Ferat."—15 drawings; Gothic.
No. 25. "Concentration."—11 drawings; Classic.
No. 26. "Labor Omnia Vincit."—16 drawfngs; Gothic.
No. 27. "Forum."—13 drawings; Gothic.
No. 28 (? unnumbered).—Cross in Circle. Gothic.
No. 29. "Cuimhnich."—7 drawings; Gothic.

We believe that the decision of Mr. Waterhouse has not yet been sent to the Committee. The drawings are to be publicly exhibited next week; it is more than probable that, after the premiums have been given, the whole matter will drop for a time, and that no serious attempt will be made to commence the erection of the buildings.

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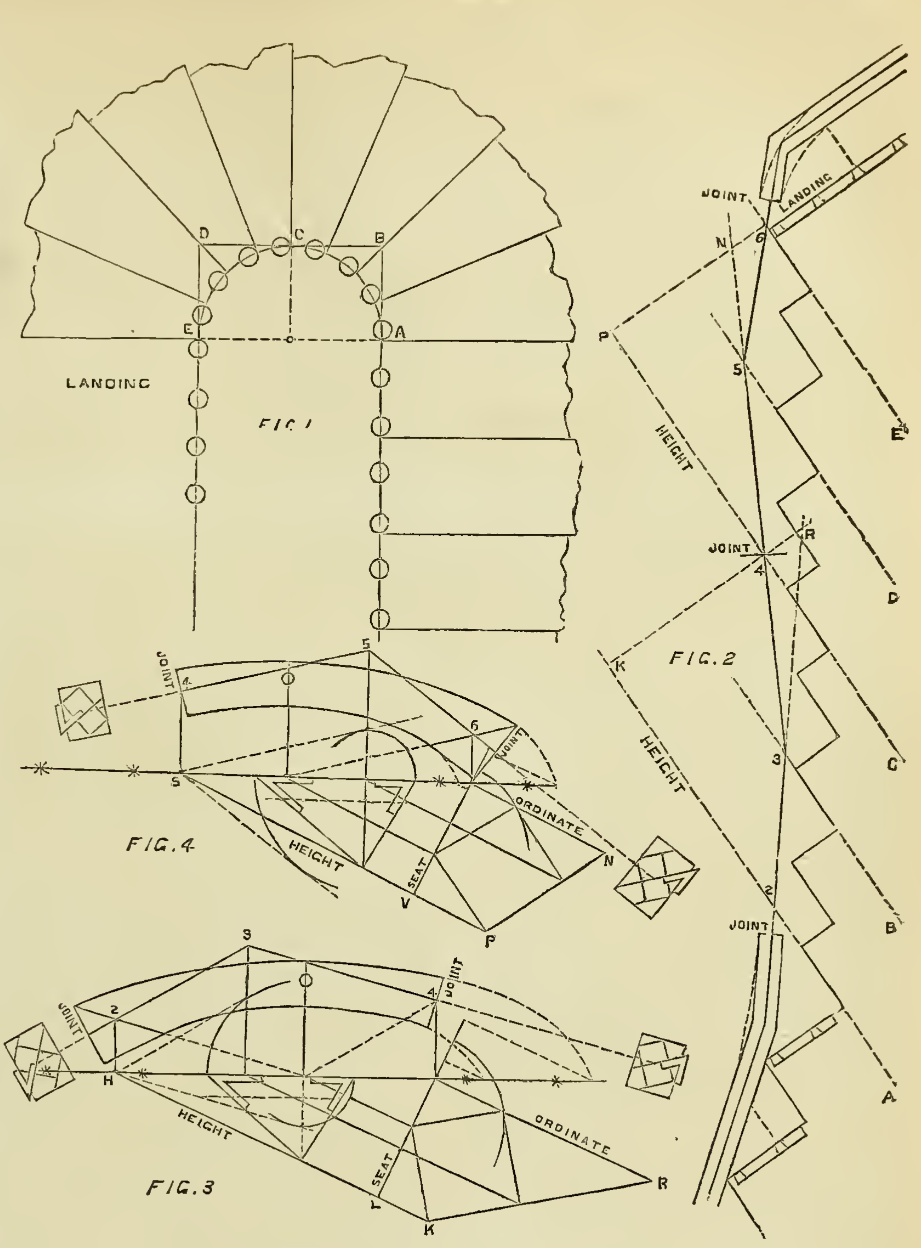
The President and Council of the Institution of Civil Engineers have issued invitations to the annual dinner of the members, which is fixed to take place at the Queen's Concert Rooms, Hanover-square, on Saturday, the 22nd of April.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXVI.

NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 206.)

PLATE 26.—DESCRIPTION OF SEMICIRCULAR STAIRS HAVING ALL THE WINDERS TENDING TO A CENTRE.

CORRESPONDENTS frequently write for information in regard to construction of wreaths for stairs which have been prepared and fixed without any attention to position of risers in cylinder.

This, and the two following plates, are copies selected from many plans of stairs which have been sent to me, with a request to make drawings for wreaths. In complying, we may, at the same time, point out some defects on the ground plans, and show how a better arrangement could have been made.

The first example is that of Fig. 1. Here the diameter of circle is eighteen inches; and narrow end of winders less than four, whilst that of preceding plate shows the circle to be only sixteen inches. Yet the narrow ends of winders there are two inches more than here. Which at once shows this plan defective in arrangement. The last step-landing should have been square, and winders thrown past the spring line below A. Then the ramps connecting with wreath would have improved curves, and make the rail a more uniform height over winders than it is possible to do here; which will be presently seen.

Fig. 1. Let circle be enclosed by tangents. These unfold on a board, as shown at Fig. 2. The letters along the margin on right correspond with those on plan. Now transfer position of winders, cutting tangents on plan, to that of Fig. 2. This done, set off two square steps. Let under side of rail rest on corners. Set off half its thickness. Next, let level rail stand above landing to suit a long baluster. You are now ready to draw pitches over winders.

Assume the first pitch; say, 2, 3, the next 3, 5, and 5, 6, for the upper. All these pitches are unequal, yet the best that can be done for stairs arranged as these are.

The winders show the wreath too high at intersection 5. But to lower it would destroy the ramp-landing, and make its curve short and abrupt.

The height for upper part of wreath is P 5, and P N direction for its ordinate.

The height for lower part of wreath being K 2, and K R direction for ordinate. Fig. 3 shows construction of mould.

Let the square equal one of those on plan, and K R equal corresponding letters on right. Draw ordinate. Make seat square with it.

Let height L B equal that of K 2 on right. Now draw pitch, and strike mould, as usual.

Tangents 2, 3, 4, being equal to those on pitches, proves the correctness of drawing. The square sections show joints and application of bevels.

Fig. 4 is the mould for upper part of wreath. Let extended side of square P N equal corresponding letters above. Draw ordinate. Let seat be square with it. Make height V S equal that of P 4 on right. Next, draw pitch, and you are ready to strike the mould.

See that tangents equal those of pitches on right.

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* This series of articles is a reproduction of ROBERT RIDDELL's work on the subject, published in Philadelphia, and by Trübner and Co., London.

Furniture and Decoration.

EMBOSSING ON GLASS.

(*Continued from page* 149.)

IN our last article we described some of the uses of embossed glass, and the material required for embossing. We have now to point out how glass is embossed. The design being prepared, may either be transferred to the glass by tracing, or, if it be plain glass, the design may be placed underneath the glass, and thus the lines will be clearly seen, and the design may be traced through direct with the pencil and Brunswick black; but this cannot well be done if the glass is coloured or flashed; in this case, we rub over the back of the paper on which the design is drawn, with either whiting, pipeclay, chalk, or coloured crayon, and trace the lines with a stylus of wood, as we have previously described in these articles. This will leave the design upon the glass in fine clear lines. A pair of common house-bellows must now be used to blow off any loose particles of dust or superfluous tracing colour. This care in avoiding dust is of vital importance to the success of the work, for wherever there is a particle of dust or grit amongst the Brunswick black, or on the work, it will be burnt away as soon as the acid touches it, and thus a speck or pinhole will be formed in the glass, in parts, perhaps, where it is not required; and this will be distinctly seen, even when the glass is ground and finished, causing bad work, which might be easily avoided by the exercise of ordinary care. This is the reason why pouncing (so useful in doing other work) is not suitable as a guide for embossing; there is so great a quantity of the pounce powder passes through the pounce holes that each dot forms a small heap on the glass, which in working absorbs the black and gathers in the pencil, and thus makes ragged edges. Glass for embossing differs from all other ornamental glass in the fact that it must have a perfectly even and smooth surface; it is also best (and almost, but not quite, indispensable) that the glass should be perfectly level; but as this perfectly level surface is one of those things which are very difficult, or almost impossible to accomplish, we are, perforce, compelled to put up with the best we can get. Polished plate-glass is, of course, smooth; but if the square is anything like large in size, not one plate in a thousand will be perfectly level. That this is as we state may be easily proved by placing two large mirrors upon opposite walls of the same room. They will, of course, reflect the room and all it contains, from one to the other, producing an endless vista of rooms. Now, if there is the slightest inequality in the surface of either of the mirrors (and there is hardly a plate without) it will be found that this inequality will reflect a distorted image of, perhaps, the line of the cornice of the room, and this distortion becomes greater, and is multiplied by every reflected repetition of the room, until, in the far distance, cornices are doubled up, architraves and doors are tumbling down, and floors are at all angles of inclination. This is a common experience in fixing mirrors, often causing much trouble, expense, and vexation.

In addition to polished plate we have Chance's patent plate, which is simply thick sheet-glass, ground and polished. This glass is much thinner than British plate, and, being polished in a similar manner, is as level and smooth as the thick plate, and, of course, quite as suitable for embossing. There is also the table-glass, which, we believe, is the oldest form in which glass is made for window glazing, &c. This glass, although not level, is very much more so than the ordinary sheet-glass, and, in addition, has on one side a beautiful smooth surface, and is as transparent and clear as the best polished plate, and, in small sizes, as suitable for embossing. The ordinary sheet-glass is utterly unfit for this kind of work: it is rough, unlevel, shady, and discoloured—this discolouration being seen in semi-opaque blue streaks, caused by the wood used in flattening the glass when in the annealing-kiln. The hot glass burns the wood, which emits a gas that leaves streaks of blue film upon it, and the sheets being full of hills and hollows, the acid acts somewhat unequally upon it in embossing. So that in every respect sheet-glass is unsuitable. All ornamental glass work, whether stained, painted, or embossed, is best worked flat—that is to say, in all work consisting of lines, such as Gothic canopies for church windows, strap work, and all outlines of letters and ornaments of every description the glass is laid flat upon a perfectly level bench or table, and the design is placed under it or traced upon it, as the case may be; the workman stoops over the glass, and is thus able to outline with great facility and freedom, and in filling up the plain spaces or masses of colour after the outline is dry the colour may be laid on freely, and the glass being flat the colour will flow level and uniform in strength, filling up every part—a very difficult thing to do if the glass is placed upright, and very important to the success of the work. In working upon the glass when it is laid flat an arm rest will be required; these are made with a straight piece of wood some two feet long, others longer, and about three inches wide and three-quarters of an inch thick, having a small piece across each end about one and a half inches wide. This keeps the centre of the rest at that distance from the glass. These rests serve the workmen to lean upon, instead of leaning upon the glass. They also serve to keep the hand and pencil about the right distance from the glass, enabling the workman to move his pencil freely and in any direction with the greatest ease. The edge of the rest serves also as a straight-edge in running lines with the pencil.

We now proceed to paint in the designs on the glass with the Brunswick black. As we before stated, this should be of the best quality. It must be clearly understood that if the ornament is to be embossed, the whole of the glass must be covered except the ornament; but if the ground is to be eaten away we must cover the ornament, and leave the rest of the glass exposed to the action of the acid; or, in general terms, we may state that the purpose of the Brunswick black is to preserve the glass from the action of the acid, consequently every part of the glass must be covered except those parts we intend to be embossed. When the design is properly filled in with the black it should be left to stand until the black becomes hard. This will take ten or twelve hours, for although the black dries quickly yet the great body of it that is necessarily put upon the glass does not get sufficiently hard to bear the action of the acid under the time stated, and we have often seen the stopping-out curl up and break, in consequence of its not having had time to get hard before the acid has been placed upon it. The black or stopping-out being now thoroughly hard, the glass is laid level and flat upon a table, and a border of walling wax of the kind we have before described, must be placed round the edge of the glass, forming a miniature embankment, in order to prevent the acid from flowing off the glass. This wax edge should be about three-quarters of an inch high. Common tallow maybe used for this purpose, but we prefer the above description of wax, as being more cleanly in working. The acid may now be poured upon the glass and left to bite its way into the body of it, and while it is operating it is well to occasionally examine the work to see what progress the acid is making. This will be best done by taking a feather and brushing away the acid in parts with it, which will enable us to see if all is going on right, or whether the acid is breaking up the ground. Should there be any indications of the Brunswick-black breaking up—which will be shown by small specks rising and leaving the glass the moment it is touched with the feather—should this be the case, the acid must be poured off at once, and the plate washed and dried, and then re-stopped with the Brunswick black where required. Now this breaking up of the ground arises in all cases from causes which may be avoided; some of them being: first, the Brunswick black being bad, or having some grit or other foreign matter amongst it; secondly, the glass may not have been properly cleaned before the black has been put on; or, thirdly, the acid may have been put on the glass before the stopping has got hard. Another cause is the acid being put on too strong. If the acid is too strong it burns fiercely, and there is much danger of the ground breaking up; its action being too quick, has a tendency to eat away the glass under the stopping after it has broken the surface; it is better to have the acid weak than strong, as in the latter case the only effect will be an extension of time in the operation. We can give no definite rule as to the time for the acid to stay upon the glass. The workman must be guided in this matter by really practical experience. One hour may be taken as about the average time, but that will depend entirely upon the strength of the acid and the hardness of the glass. We would advise that in every case a trial be made, both of the black and the acid, before going on with any important work; this is the more necessary, inasmuch as there is always some little uncertainty in the matter, and it is best to be on the safe side. The acid must now be poured off the glass into the bottles again. By pressing the wax wall down at one corner we form a spout, which serves to lead the acid to one point, and thus it may be poured into the bottles without waste. When the acid is removed the glass must be well washed with water, and then the Brunswick black may be removed with turpentine or naphtha and made perfectly clean. The plain parts of the glass will now require to be ground or obscured; this is a simple process only requiring ordinary care and skill, and of course much patience, the glass must still be kept quite flat, and will require to be bedded so as to be firm and equally supported all over its surface on a double fold of green baize, or sheets of cotton-wool, or anything else which will give the glass a soft but firm bed, in order that it shall not move or break. The grinding is effected by using emery powder and a flat square of thick glass or a piece of the ordinary plate glass fastened to a block of wood may be used. The emery may be used of varying degrees of fineness, but we prefer the finest grain or powder, as we are better able to produce an uniform surface. Fine white sand is in some respects much better than emery; both are used with water as a medium; sharp silver sand is the best. In grinding the glass, care should be taken to rub with a gentle and even motion, not straight up and down, but with a round sweep or circular motion of the hand. This is absolutely necessary to produce an even and uniform surface. The glass must be rubbed equally, and not more in one place than another, or else the grinding will be uneven, and look shady.

It will often happen that only part of a plate of glass will have to be ornamented and ground or obscured. In this case templates of wood, tin, or iron, cut to the shape of the outline required, and straight-edges, may be used. These are laid upon the glass, and held firm to the line, when the glass is ground close up to them. Another plan is to define the space to be ground with an embossed outline of about one eighth or a quarter of an inch in width. The grinding may be done close up to this line without danger of crossing it, if care is used. It will be obvious that the sharper and clearer the ornament is cut by the obscuring, the better the work will appear, and this desirable end can only be obtained by the exercise of the greatest care in the pencilling, and the proper action of the acid, for if the edges are ragged in the embossing, no amount of grinding will remedy the defect. In grinding, both the sand and emery must be kept well wet with water in order to its biting properly. If kept too dry the grinding will be of no effect, or else it will simply scratch the glass instead of obscuring it.

Fine etchings may be done upon glass in exactly the same manner as etchings are done upon copper, but with fluoric acid, in this wise :—The whole of the glass must be first coated over with the Brunswick black, having about one-third of white wax mixed with it. The wax will hold the Brunswick black from setting hard too soon, and allow the necessary time for the drawing to be etched, or we may use the walling wax before described for this purpose; but in this case the composition must be used hot, and the glass warmed while the composition is applied. When it is set the drawing may be either traced or pounced upon the stopping, and then the lines may be scraped or marked with the etching needles, or if broad lines are required small steel scrapers may be used. Of course, wherever a line is required the stopping must be removed from the glass, and it does not matter how fine the scratch may be, the acid will be sure to bite where it can come in contact with the glass. When care is exercised, even very fine cross hatching may be done. A very capital effect may be obtained by first etching a design or drawing upon the glass, and then gilding the whole solid; the etching will appear as if in slight relief, and the difference in texture between the lines of the etching and the untouched surface of the glass will have a very agreeable effect. In our next we purpose treating upon embossing in connection with gilding and silvering upon glass with gold and silver leaf, a means of decoration in practice principally confined to the signwriter, but one which, from its capability of extensions and adaptation, is well worthy of a much higher treatment and use.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE twenty-third lecture of this course was delivered by Dr. G. G. Zerffi on Tuesday afternoon last, in the Lecture Theatre of the South Kensington Museum. In his opening remarks he said that the passion for plunder amongst the Romans had worked most beneficially on the general taste of the nation. The marble statues and groups—taken from Greece showed to disadvantage when surrounded by insignificant brick hovels, and they served as an incentive to the widening of the public places and the better construction of buildings. Theatres, previously only temporary edifices, were now built in stone. Pillars were brought to Rome from Greece, and for the utilisation of these features imposing house-fronts had to be erected. A better exterior necessitated an improved interior, and luxurious furniture came into demand. The triumphers of Rome vied with each other, not only in acquiring provinces, but in acquiring works of art. The fora were adorned with statues, and the atria of citizens, and even of freedmen, became more and more decorated. This art of decoration was not, however, genuine, as it had not grown out of the artistic wants of the people; it was a strange element grafted on a strange soil by force, and much confusion was caused by the misapplication of patterns. The wall decorations of the Romans at this period were polylithic. Marble incrustations were imitated, and the walls were divided into panels. Scenography was profusely used, even historical paintings having been attempted. The principle of this kind of wall decoration was entirely of Asiatic origin, revived under Greek influence. The desire of possessing works of antique art became so universal that there were no more to be had. The living artists were unable to work fast enough to supply the ever-increasing demand, and supplanted the stucco and marble ornamentations by coloured wall decorations. Light colonnades of reed, baldachins with pointed arches and fronts ornamented with fantastic sphinxes and griffins, and simple combinations of colours in a conventional manner, were characteristics of this tendency, which produced manufactures instead of masterpieces, mannerism instead of style, arabesques instead of historical pictures, and mere theatrical wall decorations instead of art. These products could be studied in the many relics which had been found in Pompeii and Herculaneum. Mosaics also became common. One of these, which had formed the floor of the house of the Faun, was discovered in 1831. It was 1782 square inches in size, and every square inch contained 766 squares of coloured stone. It represented the battle of Issos. Seneca said that during this period any one whose walls were not decorated with costly marble ornaments considered himself very poor and miserable. This went far to prove that even the Roman middle classes had acquired a great taste for polylithic wall decorations. Pliny gave us a more systematic insight into the history of the use of marble for the purposes of ornamentation. Marble wall incrustations were first introduced by Mamurra in his house on Mount Cœlius. The temple of Jupiter Tonans was one of the first, if not *the* first, which was constructed of marble blocks in the Greek style. This author complained of the neglect of painted wall decoration, which was replaced by marble and gold. Polychromy was not altogether discarded; on the contrary, it was often wrongly employed. Marble was used to represent animals and other objects. These innovations commenced under the Emperor Claudius, and were perfected under Nero. To such a pitch was the desire for deception carried that the marble was even provided with artificial veins. The difference between this kind of decoration and that of the Greeks was obvious. With the Romans the wall remained a stone construction for show; with their predecessors it was considered as a flat to be decorated. The tendency to draw attention to the strong and rich material by giving as much prominence as possible to the large square stones was highly interesting, and, at the same time, most important, as it was also one of the characteristic features of Renaissance. Having alluded to the great prevalence of the Asiatic custom of gilding, the lecturer proceeded to treat of Roman art of a later period. He said that no one could doubt that the colossal forms which Roman architecture would now be seen to have assumed, though not altogether in strict accordance with the laws of Greek taste, were imposing, and as fully worthy of attention as the temples of India and Egypt. Augustus commenced the rebuilding of Rome. The dynamic force with the Romans, who were exhausted by conquests, civil war, and strife, took a new direction, and, instead of acquiring, had constructed. The national mind was, however, still directed towards military achievements, and was still bent on pomp and show. In the huge buildings, the public gardens, and the immense theatres which arose under Augustus, Agrippa, and others, we saw the expression of the command of a military chief. Just as the Roman legions marched, in perfect order, to meet their foes, so these groves and palaces appeared well-regulated and decorated, but heavy and stiff. The field of Mars was transformed into a town of marble palaces, and succeeding emperors embellished Mount Palatine and the Via Sacra. Nero outdid his predecessors. He sacrificed a part of the city in order to reconstruct it as a monument of his vanity and lawlessness. The Flavians built edifices of general utility. Of this period we had, amongst others, a temple of Apollo Palatinus, constructed under Augustus, in Carrara marble, the arcades round it being of African marble; the ruins of the Augustan mausoleum on the field of Mars; large baths, built under M. Agrippa (to which the Pantheon formed the entrance hall, 132 feet high and 132 feet in diameter, with a portico having sixteen Corinthian columns in granite, the roof of this portico being supported by bronze beams—the bricks were gilt, and the walls were covered with marble, and under the portico were colossal statues of Augustus and Agrippa, those of Jupiter, Mars, &c., standing in niches inside); the camp of the Prætorians, built under Tiberius; and the ruins of the grand triumphal arch of Claudius. After Nero had burnt a portion of the city, the "golden house" was built by the architects Celerus and Severus. In the decoration of these times we found one of the greatest mistakes committed—that of attempting to disguise the material. Tortoise-shell, used as a veneer for furniture, was painted over to make it resemble wood. This tendency was as reprehensible as that of endeavouring to make common materials look rich. Glass (which came into more general use in the time of Cicero), served as a means of bright and variegated ornamentation. Chiselled silver and sculptured ivory were also used for decorative purposes, and ornamentation became more and more gorgeous, and lost by degrees the basis of correct rules. Symmetry became confusion, and proportion disproportion. The walls of rooms looked like exhibitions of carpets, tapestry, and jewellery. Art retired into the over-painted, over-decorated, over-ornamented shrouds in which the mummies of old were laid, and was carried to its grave for a time. Under Vespasian, architecture was resuscitated. This emperor constructed the third Capitol, which was higher than the two former ones. The fourth was built by Domitian in Pentelican marble, and was richly gilt and decorated. The temple of Pax, built under Vespasian, had a splendid cross-vault, resting upon eight Corinthian pillars, and furnished Bramante with the fundamental idea of St. Peter's at Rome. At this period the cornices became fluted, triglyphs and indentations were used together, and the caulicoli (the central volutes of the Corinthian capital) were over-ornamented. Everything ran wild, and lost its shape and proportion. This was to be seen in the triumphal arch of Titus on the Via Sacra. Simpler forms were again attempted. Stereobates and stylobates, to heighten the effect of the static line of the building, abounded, but, in fact, merely repeated the same thing over and over again, without reason. The Forum Trajanum was provided with a bronze roof. In the midst of the forum stood the column—a grand and powerful epic poem in stone, glorifying the Emperor. After the time of Marcus Aurelius, whose column was but a second edition of that of Trajan, over-ornamentation still further increased. The principal lines entirely vanished under the pressure of continual interruptions. Half columns protruded from pilasters, consoles interrupted the vertical lines of the capitals, and thus everything became meaningless. The wall was no longer a wall, the pillar had no object, and the column was superfluous. Wherever the members and the ornamentation of a building were not the necessary products of the general and immutable laws of symmetry and proportion, the artist created confusion, and his work, instead of delighting, bewildered us. Having described the various examples of the art of this period in detail, the lecturer passed on to the times of the thirty tyrants, under whom, he said, luxury became still more fully developed. The principles of Greek architecture were totally neglected. Columns and arches were mixed together. The arches rested on the architraves, and often rose without this interruption directly from the capitals of the pillars, in direct contravention of the laws of statics. The columns were made in a spiral or screw form, and detail became the most important part of architecture. The ornamentist was the leading artist, not the architect, and the building appeared to have no other purpose than to afford him an opportunity of overloading it with fantastic forms, without order, sense, or law. It was always a sign of a degenerated art when we saw technicalities worked to perfection, whilst symmetry, proportion, and a due regard for the material used were neglected. There was, notwithstanding the technical excellence, a kind of meagreness, flatness, and vulgarity perceptible everywhere. Life appeared to be wanting, because, during the period of which he was speaking, the mechanical was placed above the ideal, and the whole of society, troubled in its inmost spiritual existence, had no longer the power to devote the concentrated force of intellect to real art. Of these times we had the Baths of Diocletian, the central portion (the cupola of which rested on eight granite columns) being used by Michael Angelo (1560, A.D.) in constructing the admirable church of Sta. Maria degli Angeli.

Roman sculpture and furniture will form the subject of Dr. Zerffi's next lecture.

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A SUGGESTED "CASTE" OF REPAIRERS.

WRITING on "The Woes of the Well-to-do," the *Spectator* of Saturday last draws an ugly picture of the jobbing building trades, and alleges that the charges made by the small masters for the most trivial jobs are extortionate in the extreme. Admitting that job-work does impede regular work, and that the demand for it is so great that if it were cheap the masters would be compelled, for fear of losing business, to "run the men off their legs," it says that the evil could be avoided by a different system of charging, which would in the end benefit all parties. "The masters should agree to a price for a day's or half day's labour, and tell their clients distinctly that they must charge by that, and not by bill, and the occupiers would then wait as they do in the country, till enough required doing to make a fair day's work. A better plan even than this would be the creation of a separate class of 'Repairers,' shifty, experienced men who might charge anything they like, but who could do any work about a house, and would do it without loitering. Under the present rules, no man not a master may step a hair's breadth out of his special business to do any other, even if he knows how to do it thoroughly. If a board needs to be tightened and a tile to be set right, two men must come with two charges; while window-cleaning, which anybody could learn to do in a month, is one of the most strictly preserved of monopolies . . . We quite understand and partly sympathize with the workmen's dislike to men who work at trades they have not learned. The practice makes apprenticeship impossible, tends to flood particular trades with half-trained hands, and generally upsets the order of things which workmen, wisely or unwisely, prefer, and, within the limits of law, have a right to prefer. But then if we are to have a system of castes, castes, as in India, must allow of subdivisions, and one subdivision terribly wanted in the building trade is a caste of Repairers, men who will do the odd jobs wanted about a house neatly, quickly, and for fair wages. We do not mean for low wages. A good 'repairer' ought to be a man of many trades, a middle-aged man glad to be relieved of hard and continued labour, but entitled from his experience to good wages, but earning them by work, not by maintaining a set of rules which diminish work by inducing employers to put up with perpetual inconveniences rather than risk the bill which they know beforehand they will be unable to control. If the masters or the unions will not give way on these points, and make arrangements in a little more harmony with the public requirements, the public will ultimately be driven to combine in clubs, which will contract with workmen to keep so many houses in order for so much a year—will, in fact, become masters for themselves."

THE INSTITUTE PRIZES 1871-72.

THE following are the subjects for the medals and prizes of the Royal Institute of British architects, 1871-72 :—

DESIGNS.

*The Soane Medallion.**—The Soane Medallion, and, under certain conditions, the sum of £50, for the best design, well illustrated by a sufficient number of drawings for the following subject :—"A Town Hall of moderate size in a Country Town, on a site 150 feet by 100 feet, with a public thoroughfare on two sides only (south and east)." The drawings (with the exception of the plan and sectional portions) to be in outline only. Two plans of the buildings, two elevations, and one section, drawn to ⅛inch scale, with one perspective view and one sheet of details—in all seven drawings—will be required, and no additional drawings will be examined in reference to the award. The further award of £50 will be made to the successful competitor, upon satisfactory arrangements being made for his going abroad for a period of six months to pursue his architectural studies within two years after receiving the medallion. The £50 will be paid in two instalments of £25 each; the first when the Soane Medallist leaves England for the Continent; and the second when he shall have submitted to the Council satisfactory evidence of his studies abroad, in the form of drawings and sketches, after an absence of six months.

DRAWINGS.

The Silver Medal of the Institute, with Five Guineas,† will also be awarded for the best illustrations, geometrically drawn from actual measurement (with dimensions figured both on the drawings showing the general arrangements and on the details), together with descriptive particulars of an Abbey Gateway, a Bridge, or other building of importance—Classical or Mediæval—in the United Kingdom or Abroad, hitherto unpublished in that manner. The Council suggest the following as being subjects worthy of illustration, but others may equally well be taken, if more convenient to the competitor :—Ireland, Cashel or Christchurch Cathedrals, or any monastic or conventual building; Kent, Bayham Abbey, near Tunbridge Wells; Lincolnshire, Tattershall Castle; Middlesex: front of Dover House, Whitehall; Law Fire Office, Chancery-lane; Entrance Gateway, Middle Temple-lane; Temple-bar; Northamptonshire, Warrington Church; Nottinghamshire, Steeples of Grantham and Newark; Scotland, Dryburgh or Melrose Abbey; Shropshire, Lilleshall Abbey; Yorkshire, St. Mary's Abbey, York; Wales, St. David's Cathedral; Dorsetshire, Eastbury Manor House. The drawings to consist of at least one plan drawn to the scale of one-eighth, or (in the case of very large buildings) one-sixteenth of an inch to the foot; an elevation and a section, drawn to the scale of one-eighth of an inch to the foot, with details to a scale of half an inch to a foot and mouldings one-fourth full size. The elevations to be in line without shade lines, the plans and sectional portions to be tinted in sepia. Perspective drawings may also be sent, and may be tinted in sepia or Indian ink. The jointing of the masonry is to be particularly marked, together with the mode of construction and materials used. It is strongly recommended that the rough drawings be plotted on the spot, and sent up to the Institute with the fair drawings.

ESSAYS.

Institute Medal.—The Silver Medal of the Institute, to the author of the best essay on the following subject :—"Windows and their appliances treated historically, artistically, and practically." A medal of merit may be awarded for any other essay or essays, if deemed worthy, upon suitable subjects selected by the authors themselves, without limit of number. All the essays to be written very legibly on alternate pages of lined foolscap paper, and to be accompanied by suitable illustrations.

Students' Prize.—(For Students of the Institute only.)—The designs required to be submitted in competition for the Students' Prize in Books, for the year 1871, are one or more of the following:—A Staircase within a space of 28 ft. by 16 ft. in a domestic building three stories high—An Entrance Porch and Hall for a Town House—A Brass Candelabrum, 9 ft. high—A Ventilating Turret or large Smoke Shaft (200 ft. high) to an extensive Range of Buildings—A Gas Standard for five lights. The drawings to be executed to any scale. The plans and sections to be tinted in sepia, and the elevation to be in outline, sepia, or colour. Perspective drawings are not necessarily required, but may be sent in outline, or tinted in sepia or Indian ink.

Directions for Competitors.—Each essay and set of drawings is to be distinguished only by a motto, without the name of the author attached; and is to to be accompanied by a letter, sealed with a blank seal, and having on the outside the same motto as that attached to the essay or drawings, and enclosing his name, with an address to which a communication may be sent. The packets, directed "To the Honorary Secretaries of the Royal Institute of British Architects," and marked "Essay for Medal" or "Drawings for Medal" (Motto), is to be delivered at the rooms of the Institute on or before the 31st of January, 1872, carriage and all expenses paid. The names of the successful competitors alone will be made known. Should none of the essays, drawings, subjects, or buildings respectively be deemed by the Institute of sufficient merit and importance to deserve the distinction of the premium offered in each case, they reserve to themselves the right of awarding such other premium in lieu thereof as they may deem fit, or of withholding it altogether; and if the best essay or drawings should be by a candidate who has been successful on a former occasion, they reserve the power of adjudging such other reward as they may think fit, and of awarding the medals to the second in merit. All essays and drawings will be returned to all the candidates, on application, to the unsuccessful after the adjudication, and to the successful after the presentation of the medal.

Copies of the premiated essays and photographs of the perspective views or principal drawings to which a prize is awarded will be required to be furnished by each of the successful competitors for deposit in the Institute Library before Midsummer, 1872. Strict compliance with all these directions is required.

Pugin Travelling Studentship.

Candidates for this studentship must send in their applications, together with specimens of drawing, testimonials, &c., as required by the deed of trust (copies of which can be obtained at the Institute), on or before the 25th of January, 1872. Extract from the schedule appended to the deed of trust:—"Every person of whatever nation shall be eligible as student, who shall be more than eighteen and less than twenty-five years of age, provided that he give to the electors satisfactory evidence of his moral character, and satisfy them that he is a student of architecture, *bonâ fide* intending to practise the profession of an architect, and that he exhibit specimens of his drawings and state the district of the country which he proposes to visit, and the class of building which he intends to study."

Any further information as to these prizes, &c., may be had on application to the Secretary, Mr. Charles L. Eastlake, 9, Conduit-street, Hanover-square.

STAINED GLASS ÆSTHETICALLY CONSIDERED IN CONNECTION WITH MODERN ART.

THIS formed the subject of a lecture by Mr. William Holiday on Wednesday week last, on the occasion of a *conversazione* at the London Institution, Finsbury-circus. After some introductory remarks, the lecturer briefly described the technical processes involved in the manufacture of stained glass, and proceeded to the consideration of the subject of his lecture, in which the first question arising was :—How far (if at all) should art be influenced by the exigencies of the material with which it deals? On this head he remarked that that which governed all ancient art—all art, in fact, until the decay in the Georgian era—might be thus expressed: —"Having various materials at our disposal, let us ascertain what qualities belong peculiarly to each, what beauties each is especially calculated to exhibit, unattainable by the others, and let us devote ourselves to the development of these beauties, and bring each to perfection." This principle animated the artists of all past ages, but it had been reserved for certain schools of the nineteenth century to discover a new rule, which was as follows :—"Having seen in the works of our predecessors what unspeakable beauties may be obtained from various materials, let us not be guided by their experience; let us rather ignore the capabilities of every material with which we are concerned; if there is a beauty peculiar to one and unattainable in any other, let us reject it, and let our efforts be constantly directed to the one grand aim of making every decorative art emulate the qualities of a bad oil-painting. It is true that even this cannot be attained—that after sacrificing every beauty peculiar to the various materials, and forcing them, by wearisome mechanical processes, out of their natural spheres, we still cannot give them much resemblance even to bad oil-painting (none whatever to good work), but—we hold to our rule." Which of these rules should be adopted—that which produced the art of the last fifteen centuries, or that which produces the Vatican mosaics, the Gobelins tapestries, and the Munich windows? The lecturer next entered into a detailed account of the results attending the application of both these rules to mosaic work and tapestry, and clearly demonstrated that by following the first rule only could satisfactory results æsthetically be attained. In considering how the mischievous principles laid down in the second rule affected stained glass, he observed that the position was somewhat modified by the introduction of the element of transparency. The necessity of employing pieces of glass joined with metallic rims put difficulties in the way of obtaining pictorial effects similar to those which belonged to mosaic, but the transparency of the work made such attempts yet more absurd. The consciousness that the light which illuminated the interior of a building came *through* the figures in the windows necessarily made any attempt at illusive imitation in those figures appear incongruous. That a window should contain coloured glass would add to its beauty if the colours were admirable and the combination harmonious; that those colours should be disposed in the form of figures would increase the interest; yet further, every grace of form and variety of expression might be given to those figures, and still the pleasure would grow with the added beauties. A head might be traced in outline upon an ordinary window-pane, the expression of which might be infinitely beautiful; but if to those sources of pleasure in a window we began to add that of pictorial imitation of the solidity of nature, the effect must be disturbing; the feeling that the light was coming through the figures to reach us must clash with the naturalistic appearance. This objection to naturalism, which was peculiar to glass, was not, however, stronger than that which was common to glass and the other materials employed in decoration, but the element of transparency gave additional force to the argument throughout. For instance, the quality of colour obtained by letting the light shine through a piece of coloured glass was very unlike that which arose from light falling upon the surface of anything of the same colour; there were grays and half-tones in the surface-lights which could not be imitated in the transparent glass. As usual, while we were vainly striving after uncongenial effects, and missing all that rendered those effects valuable, we were forfeiting numberless beauties which were ready to our hand, and which no painter could have produced on canvas. The most lovely glittering qualities were to be seen in glass in the whites and light colours, and the most jewelled depths in the deep sapphire blues, olive greens, rubies, &c.; but as these jewelleries in colour were not to be seen on ordinary surfaces in a natural light, the realist was bound to forego them all. And, as in the other arts, the false work was more laborious than the true, an immense amount of time was consumed in destroying the natural beauties of the material. Large numbers of persons were misled by this error, and well they might be while decorative art was in so feeble a condition. Of mosaic we know little in England, and of tapestry about as much; but for the last thirty years we have been filling our churches with stained glass; and what, Mr. Holiday asked, was it like? Not like the Munich glass, certainly, but worse; it was not based upon a false modern principle, for it was based upon no principle at all, while it discredited the early work in the eyes of the modern public by a show of adherence to early traditions. There were, of course, many exceptional specimens of modern glass, some praiseworthy, some noble, but they formed a lamentably small percentage of the entire stock. It was not difficult, the lecturer went on to say, to see how the style had arisen. When Gothic architecture was revived, stained glass windows were in request, and the artistic perceptions of the general public having been long deadened by the steam-engine and other institutions too absorbing to leave any room for unpractical and sentimental pursuits, it was not at all necessary that these windows should contain any good art, provided they were cheap. *Any* stained glass was thought better than *no* stained glass. As for the makers, their course seemed to have been as follows: Some style or other being necessary, they followed the architectural lead, and as thirteenth century buildings were most popular they would have thirteenth century glass. On looking at windows of this period they perceived that, for the most part, they consisted of medallions or panels in the form of circles, quatrefoils, &c., the intermediate spaces being occupied with foliated ornament, while the medallions contained figure-subjects. They perceived that the drawing in these figures was that of a vigorous but primitive school (or, rather, it is so, but they were far from perceiving it); they only saw that it was unlike the drawing of the Royal Academicians, and, therefore, must be bad. From these observations the practical manufacturing mind easily determined how to act. Bad drawing could be obtained without difficulty; and as for colour, they could greatly improve upon that of the old glass, for clearly the brighter the colours were the better must they be. The great advantage of this system was, that it was not necessary that an artist should come near the windows. An artist would be seriously in the way; he might recommend that the figure subjects should be entrusted to some one who knew how to draw, and this would entail expense; besides, neither good drawing nor ideas of any kind were necessary for stained glass. Sprawling limbs and twisted necks were the only requisites. An artist, moreover, might have crotchets about the material; he might ask for deep rich colour, and this would involve thicker, and therefore more costly glass. Who could tell whether he would not even suggest that an extensive composition of colour ought to be given to an educated colourist? In fact, there would be no end to the inconvenience of letting an artist have anything to do with it. This system produced nearly all the stained glass erected in our churches during the earlier years of the Gothic revival, and still produces large quantities. Doubtless there were some persons, even at this early period of the resuscitation of stained glass, who honestly sought for something better; but the difficulties were great, and it would seem that they were unable to achieve anything capable of separating itself emphatically from the prevailing style. Such efforts appeared to have been made only by some of those who were connected with stained glass works, and they were, on the one hand, too much hampered by the commercial conditions of their work—the necessity of competing with the men who produced cheap windows, the difficulty of obtaining any but the most wretched material, &c.; while, on the other hand, they did not possess the invincible original power which alone could obtain order out of such chaos. Having in the most favourable cases only moderate artistic abilities, these men barely succeeded in attaining respectability in a style which, having no vitality, was destined soon to become incapable of commanding respect. Their highest ambition was by careful study of the early work to reproduce it exactly, and it needed a more penetrating philosophy than theirs to show that what they aimed at was impossible. They might copy it line for line and colour for colour, but to breathe into it the breath of life was beyond their powers. If art was the expression of the artist's mind and affections, it could not be that the same art should be the natural product of two widely-differing ages. Our thoughts were utterly unlike that of the thirteenth century, and until we gathered figs from vines and grapes from fig-trees we should not get thirteenth century art from nineteenth century artists. Some vigorous movement from without was needed to put an end to this hopeless state of things, and of those who were instrumental in effecting such a movement, the late Mr. Winstone, a barrister, took the foremost place by his indefatigable exertions. He took the material in hand, and with the co-operation of Messrs. Powell and Sons, analysed the specimens of old glass, and succeeded in producing new glass infinitely surpassing in beauty and depth of colour that which was generally in use. It was further resolved to call in the services of an artist, and Mr. Burne Jones was one of the first to whom designs were entrusted. What was attained by these means might be seen by visiting Waltham Abbey, the east windows of which were designed by Mr. Jones, and executed by Messrs. Powell. They were equal to the finest thirteenth-century work, but differed from the glass of other modern workmen in this respect, that while the glass of the prevailing style preserved none of the beauty of colour or conception of the old work, and imitated only the archaic drawing (which it simply caricatured), Mr. Jones affected no archaisms, but reproduced marvellously a splendour of colour which is seen only in the best early glass. Since then, designs for windows have been made by Mr. Poynter, Mr. Madox Brown, Mr. Albert Moore, Mr. Rossetti, Mr. William Morris, and many other artists. Mr. Holiday then proceeded to notice the effect which these artists' works had upon the school generally. Although some of the firms engaged in the production of stained-glass windows possessed among their members artists of considerable ability, who used every effort to keep the work executed under their superintendence up to a good standard, there was great difficulty in avoiding mannerisms where a large quantity of work was produced. Many houses, too, acted on this painfully commercial principle:—They would produce good work if their clients would pay for it—it would be more to their credit—although they did not hesitate to produce, if required, marvellously cheap (and hideous) work. There were also houses where no good work was even attempted. The worst windows were to be found, not in obscure churches in provincial towns, but in our cathedrals and abbeys. Some of the largest windows in Westminster Abbey were of this kind, and such windows abounded in fashionable churches, and would abound so long as the public could not discern between good work and bad. This being the case, it was not surprising that many persons whose common sense enabled them to see the folly of filling a window with caricatures of archaic drawing should be carried away by the contrast presented by the Munich glass. There they found excellent drawing, and the colour, though not fine, was not so offensive as that of most of the glass produced in this country. But, in flying from one error, many people only ran into another. The fatal hankering after the effects of an oil painting, which destroyed the vitality of the Munich school, rendered progress to anything good impossible, although it was this very error which caused works of that school to be so popular with persons of imperfect artistic education. Mr. Holiday said that he had never been in Cologne Cathedral, but he heard that if one wished to estimate at its proper value Munich glass, one should go there, where there is much of it, and where, being seen side by side with the glorious jewellery of the old glass, it looked like painted window-blinds. With regard to the Munich windows in St. Paul's Cathedral, he observed that it was not too much to say that a window by Mr. Rossetti or Mr. Burne Jones would as far excel them as they excelled the kaleidoscopic work produced by our apprentices. Mr. Holiday said he thought he had established the principle that all art was radically bad in which the exigencies of the material were not recognised, and in which the beauties of the material were neglected. Having briefly inquired into the mode in which the figure might be treated in arts where a limitation arose from the nature of the material, and reviewed the changes of style which had taken place in stained glass, the lecturer, in conclusion, said:—"We cannot put on a thirteenth century sentiment as we do a morning coat, and change it for that of a later age, as we change our dress for dinner. The styles, when they existed, were the spontaneous growth of the ages, and were fraught with intense meaning. Let us not degrade ourselves by caricaturing them; it must all be false and hollow if we do. Their drawing is not natural to us; their ideas are not ours; that which is impressive in them would be foolish in us. When a Mediæval artist drew the Creator standing upon the earth, planting the sun and moon in the heavens, one with each hand, the conception was colossal. But we cannot do this now. Our heads are full of diagrams of the solar system, and we should feel that the Creator must have one arm nearly four hundred times longer than the other to place them at their respective distances from the earth."

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* Open to all members of the profession under the age of thirty years.

† This medal is open to all members of the profession without limitation as to age.

ON COMMON ELEMENTS OF BEAUTY IN RACE IN GEORGIA, CIRCASSIA, THE HOLY LAND, AND THE BRITISH ISLANDS.*

THERE is, perhaps, no fact more gratifying to the cultivator of an intellectual pursuit than that community which he recognises in studies the most remote or alien from his own. In what is purely technical the artist and the mathematician will find no point of contact—the one will lend only a deaf ear to the other; but if the mathematician ascends to mathematical philosophy, it is then in the discussion of principles that sympathy is developed, a mutual intelligence established, and illustrations are willingly received from the special knowledge of each. The painter and the musical composer in their arts have no title to union; each is material and mechanical; but the handling of one has no relation to that of the other—one produces permanent effects of colour, the other transitory effects of sound. Let each deal with the immaterial, with the laws and properties of light and colour, and the laws and properties of sound, and then marvellous resemblances are perceived in laws governing what are imponderables. It is in the region of the immaterial, that is, of what relates to the mind, that the bases of sympathy are formed, because it is in that region we have more particularly to recognise the influence of the providential operations of the First Cause and their reception by the mind of man.

It is gratifying to think we are bound together in thought rather by what is divine than by what is human—not so much by the touch and handling of, to-day, that which is for our hourly wants, and may be sordid, but by what is eternal in its beginning and immutable in its laws, Truth, the manifestation of heavenly wisdom which comes to us in its descent of age after age, the inheritance of mankind in all time. It is by this spiritual relationship that all great men are the sons of God, and rightfully associated. It is this title which, belonging to the chiefs, is claimed in its minor privileges by each votary of an art or science, and which, while it establishes a chain of community between the student and the master, between the humble draughtsman and Michael Angelo, links further in alliance through the masters the members and professors of each art and science. Who that thoughtfully considers will doubt that a Newton and a Michael Angelo can recognise a community of mind and a mutual occupation of thought, because they have reached that stage or extent of knowledge and catholicity of appreciation that the boundaries of special pursuits have been passed, intermingled, and effaced?

It is, indeed, the strength of art, as of science, that while special knowledge is assiduously cultivated by the practitioner, so shall the highest studies also be carefully pursued. The greatest proficiency in an art will be limited by individual experience, or that of a few masters. Hence the extension of its inspirations must be sought not within such a restricted circle, but without—that is, in the great realm of knowledge, where the cultivators are not those of one field or one vineyard, toiling and waiting year after year, but men seeking experience everywhere, and freely giving and sharing the abundance of their varied products.

The nobility of his art is worthy of being remembered by the sculptor and the painter, but it is too often neglected. Under the plea of a passionate devotion to its exercise, the artist will stedfastly abandon all other branches of study, establish himself as ignorant of what every man in society makes himself an interest in, and thereby effectually sever himself from the world. This, it is almost needless to say, is not what the great men in art have done, but it is the very effectual process by which very many men of promise among ourselves have checked their own progress, and thereby the general progress, and that of our nation. It is the same on the stage. The great actor, be it Garrick or Kemble, was the friend and associate of all who were great—the rank and file; and this is not the only army which, wanting in generals, shines in the bar-parlour or the taproom. Artists themselves become so unconscious of the consequences of their desertion of the intellectual world while absorbed in what they deem and entitle an intellectual pursuit, that they cannot observe the outward and visible signs of their own decadence. Let us go to our own exhibitions and look at what are called "historical" subjects. They are so scant in their reference and so trite that *Punch* yearly publishes the catalogue of stock-paintings in advance. There is conclusive evidence that the painter and the sculptor busies himself not with history or literature. If we go into the streets and see what the architect does, we shall find the same poverty of illustration, denoting the same influence of causes.

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* Read before the Society for the Encouragement of the Fine Arts on Thursday, March 2, by Mr. Hyde Clarke, Foreign Secretary of the Ethnological Society.

This must appear strange; for the architect, the sculptor, and the painter are above all Englishmen, and ours is a glorious history, as our literature is the glory of the modern age. If we are to have a national school and a national style, it must be by our artists knowing and feeling what is national at home, studying the Geeek, the Roman, what is Classical, what is Mediæval, what is Revival, but accepting from these principles alone, and not copying detail. We begin by copying Roman or Italian detail; we end by its adoption, but we end too by losing sight of the great principles on which ancients and moderns worked.

It is, therefore, in an appeal to the general claims of intellectual studies to the acceptance of the practitioners, admirers, and promoters of art that the subject now before the audience is brought forward. It has, in any common way, nothing to do with painting or sculpture; and yet, rightly considered, it has much to do. Beauty is a great element of all art treatment, and the study of its principles belongs to the highest discussions in philosophy, for the Sublime and the Beautiful, if they have been bodily expressed by the chisel and the brush of men almost inspired, so have they been dealt with by the great teachers and masters of the human mind in all time.

The beautiful we recognise in all the regions of creation, whether in the smallest flower or in the landscape of which the eye of man cannot reach the furthest borders, in what is dead, in what is living, in what breathes. The love of the beautiful in Nature may be regarded as general, and there is little difference of opinion among any men as to the beauty of a flower, a butterfly, or a bird. It is when we come to the highest type of beauty, that of man, or, better to say, that of woman, that diversity of opinion is shown; it may be, rather, that preferences are expressed. These preferences are no proof, as has been assumed, that there are no practical standard of beauty. They have no immediate or necessary connection with the determination of beauty in the abstract. The negro chooses the wife, whom he may or may not regard as a beauty, because by some traditional influence of selection he must choose a wife from his own family or tribe. The negro and the Kalmuck are not, however, votaries of beauty for its cultivation in art. The rag doll of an idol or a fetish is not paraded as a type of beauty on which mankind is modelled.

We may, therefore, approach the consideration of the beautiful without regard to the diversities of its appreciation by various races of mankind, and particularly by savages. As a matter of fact it is to be accepted in its reference to those alone who have cultivated and developed the beautiful in its artistic expression. This, so far as it is a limitation, is really a limit for those races in which civilisation, and, consequently, art culture, has been continuously developed. Among these races, although the beautiful in all Nature is acknowledged, yet it is in the form of man that the highest type of beauty has been accepted. Here, again, a further stage of development is to be marked, for while the body with its limbs, muscles, and textures has been so accepted, yet beyond this the highest expression of the beautiful is held to be in that portion of the body where not only the workings of life are best shown, in the face and its features and members, but where the workings of what is more than mental life—the never-dying spirit of man—are powerfully and freely exhibited.

The human face has its severe aspects and features, and those that are beautiful, and it is these latter which have of course exercised their great influence in art; but Nature must have preceded art and operated on it. Just as Greek art did not produce beautiful women, but copied them, so must types of beauty have been before acknowledged and admitted. There was to a great degree, and there still is, a canon of beauty received by all. A handsome Greek bust is not admired merely because it is antique or Greek; but a woman of the same features who is met with anywhere in Europe will be alike admired. As there is a general appreciation of beauty, it is worthy of inquiry whether there has been any possibility of a community of models among many nations.

This may bring us to absolute questions of ethnology and pre-historic research, subjects which, however popular in this day, are remote from art and the occupation of artists; but the artist may and must go to the pre-historic, even if he wishes to find and know the elements of his art. This he must do, because art is no thing of this day, but of all time—if not as old as man, as old as the first seeds and germs of civilisation, recorded among the cave-men of the Dordogne, and carried out in empires and kingdoms of civilisation, in epochs whereof history has long ceased to speak, and where history has to be reminded by patient inquiry and research.

The result of our late inquiries is to give evidence of correspondence and connection in the most distant times between races now widely dissevered. If we want to know what language was among the greatest races of High Asia three thousand years ago, we must seek it among the Caffres now. If we want to know how Stonehenge was built at the same period of time, we may go to the Khasias, near our tea-plantations in India, and see them building their piles of great stones, or what are called megalithic monuments. Weapons are manufactured with identical peculiarities in Africa, India, or Australia, and were so among races held to be extinct, or, at all events, incapable of present identification. Thus we get witness that in the furthest and oldest times migrations took place, which scattered arts throughout the world far and wide, and not only arts handed down from craftsman to craftsman, but words, the creatures of the passing breath, and garnered up by the not too-faithful ear.

Among these migrations, one as yet unobserved by the scientific world took place from Thibet, through India to the furthest limits of Europe, from three thousand to four thousand five hundred years ago. Of this ordinary history tells us nothing, but that wanderers left records of their passage which we may now examine. If an ancient atlas be taken in hand the names of the rivers, from India beyond the Ganges even to these Islands, will be found to be of general forms, evidently of the same type. Setting aside all local investigation, and the efforts of scholars to explain them by such means, and giving my own results recently obtained, it will be ascertained that the river names and other names two are to be interpreted by one unsuspected group of languages, those of the Caucasus, and particularly by the Georgian and Circassian. This is not the place and time to enter into minute evidence on such a point; that may be done book in hand by those who choose to test the fact and are competent to do it.

It is enough for us that some races, speaking old Georgian and Circassian, were at the head of great hosts which conquered the whole world in ancient times, and now regarded as civilised. The names of the river, in breath fleeting as the stream, has been echoed down from man to man in all these regions. The extent of this influence is that of all India, Assam, Media, Persia, and what we regard as the seat of the earliest learning—Syria and the Holy Land to the borders of Egypt at least—Caucasia, and Asia Minor, Greece, and the islands of those seas, and the lands to the Danube, Italy, Spain, Gaul, Britannia, and Hibernia.

Language is no certain test of race, but it is sometimes a safe indication, and in the area occupied by these old populations (for which my term is Caucaso-Tibetans) are still found those speaking languages identical with those of the river names. These Caucasians, these Georgians, and Circassians, have a good title to be representatives of the people of old. They still have the reputation of great beauty, as did the ancient Iberians of Caucasia. In the oldest times, as stated, these populations were not confined to the Caucasus; they ranged the western regions of the ancient world. Their kinsmen, the Canaanites, speaking the like language to Georgian, comprised the children of Israel in the Holy Land. On the Tigris and Euphrates they held empire; Lydia was one of their last kingdoms, and their people were those that Greeks called barbarous-speaking in Asia Minor. Under the name of Amazons they made a fresh effort to re-possess themselves of Greece. On Italy they had set their mark, and the Romans largely inherited their mythology. The Etruscan mystery can be unwound by this Caucaso-Tibetan clue alone. Having discovered, and named, frequented, and occupied Britannia and Hibernia, descendants of their race would be found in ancient time, and presumably now.

Thus we have materials for establishing a chain of connection in pre-historic times among these countries; again (though less close) in Classic times, and in these days the fragmentary representatives of dominant and imperial races more or less dispersed and metamorphosed.

It was with this Caucasian population the Greeks had to deal in Asia Minor in the highest periods of art; they intermarried with the women and from them they took many of their models, if not their best. This recognition of the Caucasian element (not that of Disraeli) in the Classic epoch we may proceed to accept as a common appreciation of beauty throughout Western Asia.

In the empires of Media, Persia, and Armenia to this day, the people, although speaking Indo-European languages, are not in type like ourselves, but they are nearer to the Georgians than to ourselves. They were in ancient times Caucaso-Tibetans in blood and language, and after an Aryan conquest they have changed in language only.

It is in the identification of the Canaanites with the Caucaso-Tibetan race that we obtain interesting illustrations of the Mosaic and Biblical records. We are justified in accrediting the great beauty of the daughters of the Canaanites, who led astray the rulers and men of Israel to the worship of Moloch and Baal, the gods of the Caucaso-Tibetan mythology. It is, too, in such intermarriage that we must seek the explanation of the appearance in our day of those most beautiful women among our Israelitish friends, who have been admired by poets and painters throughout Europe. This is to be noted because it is another type among the Israelites, more African, and testifying to the sojourn in the serfdom of Egypt.

The connection of the Etruscans will account for those resemblances in artistic treatment which strike the observers of their monuments, and will also explain their Eastern character, asssigned on false indications to a descent from the modern Armenians.

With regard to Britain, the wave of English conquest has swept it too closely to look for any descendants of the former conquerors, unless by chance any blood of theirs linger in the people of the mountains of Wales; but in our neighbouring island of Hibernia we have a great variety of ethnological types; and some of the most beautiful, particularly among the women, may, in the present state of our knowledge, be assigned to a common inheritance with the other races of recognised beauty.

The real appreciation of beauty in woman, apart from its mere sensual recognition, may be regarded as a step in the career of civilization. It is one in combination with other moral influences which has exerted a great effect on the development of the higher faculties of mind. It may be considered as one cause for the advancement of art, and, indeed, of other mental efforts. In an ethnological point of view, the reign of savages is that of ugliness, and of limited appreciation of beauty; and it is only when those races appear on the scene of empire, among which the beauty of women is a marked feature, that we witness the real dawn of art; for the ornaments of cave-men and other savages cannot justly be so regarded.

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INTERESTING DISCOVERY IN LICHFIELD CATHEDRAL.—A fresco painting has been recently discovered at the east end of the south side of the choral aisle in Lichfield Cathedral, a portion of the edifice which is thought to have been a chapel dedicated to S. Chad. The existence of other illuminations in the immediate vicinity of the fresco would fix it as a specimen of the art of the thirteenth century. The subject is the Crucifixion, the centre figure being Christ upon the Cross, with two figures on either side, answering probably to the Blessed Virgin and S. John. The groundwork is of a greenish tint, studded with white stars. The predominating colour of the drapery of the figures is a lightish red, the cross also being of that colour. The expression of the face of the Saviour, so far as it is not mutilated, is that of sorrow; but in some of its details the fresco is curious, if not grotesque. The blood streams down both the arms and from the side of Christ, the colour retaining much of its original freshness. Above the head of the centre figure is the representation of the Holy Ghost in the shape of a dove, a wreath falling from its mouth, and apparently ending by being wound around the Cross

Civil Engineering.

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ENGINEERING EDUCATION.

Mr. FRANCIS P. BOND, B.A., Principal of the Hartley Institution, Southampton, has (by reason of the fact that the institution over which he presides is a training-school for civil engineers) some claim to be heard on this question. In a letter to the *Engineer*, he observes that the recent decision of the House of Commons with regard to the necessity of candidates for appointments in the Public Works Department of India being compelled to pass through the Cooper's Hill College, has given the engineering schools of the kingdom a respite which they had little reason, under the circumstances, to expect, and with which they ought to be well content. He continues :—"It is to be hoped that they will turn it to account by so reorganising their educational arrangements that the Government shall have no ground on any future occasion for repeating the charge that they are incapable of providing an adequate supply of well-educated young engineers for the public service of the country. But, however well-intentioned may be the educational efforts of these institutions, they will meet with little success unless they are seconded by the establishment of an educational test, general as well as professional, upon the basis of which the engineering profession shall for the future be constituted, and which shall alone give a recognised status to every one who aspires to belong to it. It is to the Institution of Civil Engineers that both the profession and the public will naturally look to take the steps which are necessary to rescue the former from the state of utter confusion into which it has got, and to put it upon the same footing as the other learned professions of the country. The Institution affects, and with justice, to represent all branches of constructive science, and there is no other body that can, with so much fitness, undertake this work of uniting all upon a common basis of general educational qualifications. It is a well-understood principle that privilege and responsibility go together, and the Institution cannot abnegate the one without risk also of forfeiting the other. It has already collected and published a sufficient amount of evidence upon which to act, and if the subject were relegated to a competent committee there would, I believe, be no difficulty in passing such a scheme as would meet the educational requirements of the time, without at all detracting from the practical nature of engineering training which has hitherto formed so prominent a feature of the English system, and of interfering with which the Institution may be naturally very jealous. What is wanted is very simple: a graduated course of scientific training, both theoretical and practical, which every aspirant to a position in the profession shall, for the future, be required to pass through; a system of examinations by which the efficiency of this course of training shall be thoroughly tested; and a diploma which shall testify to these facts. These conditions will also, of course, necessitate an examining board, and should, I think, be supplemented by a certain amount of inspection of educational institutions which profess to provide instruction for students to insure at least a minimum degree of efficiency in them. Such a scheme also should include the science of architectural as well as of engineering construction, and in so doing I have no doubt the Institution of Civil Engineers would obtain the ready co-operation of the Institute of British Architects. A bill framed to carry out these objects in a liberal spirit, and without any protective exclusiveness, would, I feel assured, meet with the support both of the architectural and engineering professions generally, and might be carried through Parliament without difficulty. It would be the best possible proof to the Government that these professions recognise their educational deficiencies, and are quite prepared to supply them. One thing is, I apprehend, quite certain, that the state of chaos in which these professions at present are, with regard to the education and qualifications of those who assume to practise them, and which is a disgrace to England as a civilised country, cannot be allowed to go on much longer, and that if the Institution of Civil Engineers does not step forward and provide the requisite remedy, others will do so, and thus take the work out of its hands."

WROUGHT-IRON PIER AT CLEVEDON.

The following is the substance of a paper read at the Institute of Civil Engineers on the 21st inst., by Mr. J. W. Grover:—"The author stated that the Act for constructing a pier at Clevedon was obtained in the Session 1863-4, but little was done upon the ground until the spring of 1868, which was singularly boisterous and unpropitious. The works were virtually completed at the end of the same year, and had since stood well, without material damage. The coast of Somersetshire at this spot was composed of dark cliffs of magnesian and mountain limestone, of which large fragments were scattered about the beach, the spaces between them being filled with soft mud. The site selected for the works was tolerably free from these obstructions, being a thin promontory of rock, level from right to left, and dipping seaward at an angle of 12deg. to 8deg. Beyond this came mud 13ft. deep, upon boulders and clay. At the head a ridge of sand, 2ft. deep, covered a bed of hard red clay, giving a tolerable bottom. The chief difficulty was, however, the great rise and fall of the tide—viz., 45ft. at springs. As the Bristol Channel was only nine miles across at this point, the water acquired the velocity of a mill-race on the ebb, or $5\frac{1}{2}$ miles an hour. Clevedon was also exposed to high seas from the south-west. The structure comprised, first, an approach of masonry, 20ft. wide, and 180ft. long, with a falling gradient of 1 in 10. Secondly, the body of the pier was formed of eight spans of 100ft. each, supported upon piers of Barlow rail piles, spreading to a wide base at the foot, and clustered at the top. From below the girders, arched ribs of Barlow rails were connected to the vertical piles. The main girders of the structure were continuous, 3ft. 6in. deep and 800ft. long, the flanges being 1ft. 6in. wide, and all of wrought iron. The Barlow rails of the piles weighed 80lbs. per yard each; they were riveted back to back, and were filled with a preparation of coal-tar. The main girders were placed 16ft. 6in. apart; the seats, which were continuous, rested upon the top flanges, and the pier, at the parapets, was nearly 19ft. wide. The floor was laid with close planking 3in. thick, which ran longitudinally, and presented, with the camber of 3in. in the middle, an appearance like a ship's deck. The sides or parapets were close boarded. Below low water mark the Barlow rails were discontinued, and the piles consisted of solid stems of wrought iron 5 inches in diameter, screwed to depths varying from 7ft. to 17ft., with cast-iron screws 2ft. in diameter. The pier head was 50ft. long by 40ft. wide. From the ground line to the deck it was 68ft. high. There were five lower stages or landing-decks, 10ft. apart, connected by wide staircases. The head was composed of piles of Barlow rails weighing 70lb. per yard each, riveted back to back; they were connected together with rolled joists, and were strongly braced by diagonal ties. The length of the longest pile was 76ft. and the pier was accessible at low water of spring tides. One span was tested with a central load of 42 tons, when the deflection was $1\frac{1}{4}$in. in the centre. The weight of wrought iron employed was less than 370 tons, and of cast iron 7 tons. The cost of the works was under £10,000. The contractors for the pier were Hamilton's Windsor Bridge Ironworks Company, of Liverpool, and for the approaches Mr. Ambrose Oliver; the works being designed and carried out by Messrs. R. J. Ward, M. Inst. C.E., and the author."

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ON ENTASIS; ITS USE AND MISAPPLICATION.*

Did nothing remain to us but the fragment of that glorious temple which once crowned the Acropolis at Athens, it alone would establish the supremacy of the ancient Greeks in intellectual culture and taste over all other nations since the world began. It stands unique, and is as superior in excellence to what followed as it is to all that preceded it; and although twenty centuries have elapsed since it shone forth in all its sparkling brilliancy the glory of Athens, its spell is mighty yet; its every fragment is precious, portions are found in every art museum in the world, and every detail of this celebrated monument has formed a separate theme for artists and lecturers and scholars. The ordonnance of the Greek Doric as exhibited in this temple attains its highest and most complete development.

The stylobate, the column, and the entablature, along with all their subordinate parts and lesser members, when critically examined appear to warrant the conclusion of an ingenious writer in one of the reviews which I remember reading many years ago—that the typical idea therein embodied and presented to the mind was that of weight adequately supported. The author illustrated and enforced his argument by reference to Egyptian architecture on the one hand, in which the typical idea suggested was that of simple weight; and to Gothic architecture on the other, in which the typical idea was that of weight annihilated.

In the Doric temple the massive stylobate is laid in three stages, or steps, rectangular in profile, producing an impression of absolute solidity and repose, and upon this basement rests the colonnade, or line of columns. The quality of supporting power with which the column is invested is something marvellous. It is not merely cylindrical, otherwise it would have been clumsy, top-heavy, and unstable. It is not simply tapering, else it would have indicated weakness, or a predisposition to bend and break. It rises from its basement slowly and deliberately, like a thing of life, and as if it knew its work, and gradually tapers more and more as it ascends, till, before suddenly expanding into the beautiful echinus, it knits its sinews together like the wrist of a strong man whose hand supports a burden or delivers a blow.

While the column expresses supporting power, the entablature expresses weight. Divided into three portions, the first (the architrave) is simply a square beam, or lintel, and rests upon the column, unaided by any means of art, its gravity alone being sufficiently expressive of its purpose. Not so, however, with the frieze, which could not thus have asserted itself had it only been another (a superincumbent) architrave; but by means of the triglyphs, with their vertical channels, its individuality is marked, and its downward pressure strongly expressed. And these vertical channels are not continuous all along the frieze, but thriftily gathered into triglyphs, or groups of three, whereby their power is increased. Then, by another of those refinements peculiar to this order, their expression is still further increased by means of the guttæ, or drops, which hang beneath them suspended to the fillet of the architrave. These guttæ were not intended to represent drops of water, as some would foolishly have it, but, like little pendant plummets, they carry out and intensify the idea of weight. The metopes, or square spaces between the triglyphs, were filled in with sculpture in alto-relievo, and by means of the fine contour lines of the human figure would add, by contrast, yet another element of force to the weight-suggesting idea of the triglyph.

The projecting cornice crowns the whole, and you will observe that it is not horizontal, like most other cornices, but sloping, or inclined outwards, having the soffit of the mutules furnished with guttæ, all expressive of weight or downward pressure.

I return to the column, to the peculiar curve of whose vertical section has been applied the term entasis. What does this mean? It is generally understood as a swelling or convexity of outline to denote strength. This is near the truth, but far from embodying all that is contained in that word. On referring to Donnegan's "Lexicon," I find "Entasis" defined as the act of straining or stretching; constraint; effort; strain; tension; intensity. This throws a wonderful light upon the aptness of its application to the Doric column. Instead of this upright pillar of stone being a passive inert mass like the lintel which it carries, it is endued with vitality and effort; and asserts its purpose according to the true principles of scientific law applied with an amount of exquisite aesthetic feeling unequalled by any similar example that I know of in architectural history. I shall not speak of the delicate flutings which intensify this upward energy —nor the three annulets which bind the ruck of the column before it spreads out into the self-asserting freedom of the ovalo, a freedom which was again checked before it had got too far, by curving inwards to support the abacus. I shall not dwell on the minor details of this unrivalled monument, all more or less carrying out and supporting the typical idea; nor shall I refer to those invisible or almost imperceptible curves, said to be found there, which at one time originated so much curious and interesting discussion. Neither is it necessary for me to allude to the skilful means adopted by the Greek artist in overcoming certain optical illusions, such as increasing the diameter of the angle columns and setting them close to their fellows, although these are all auxiliaries in the enforcement of the dominant idea. I am content to redeem the entasis of the Doric column from its being supposed to owe its existence to a regard for æsthetic beauty alone, and to show that it appeals to the intellect, and rests its highest claim on our admiration to its being a splendid example of the principle of generalisation of a varied and extensive natural law. Nowhere has this principle been so well or so cleverly set forth as in a little book on the principles of design by that ingenious, though somewhat eccentric writer, E. L. Garbett, a work that ought to be in the hands of every student of architecture.

Well, then, since we have got to the root of the matter; since we know what entasis means, since it no longer signifies a simply beautiful-swelling outline, but is significant of a vital force and energetic supporting power, the absurdity of a column possessing this quality set up as a monument, and carrying nothing at all, is transparent enough; for the trifling figure, or ball, or urn, with which such elongated pedestals are surmounted claims no such demand of wasted energy and strength. And yet, can such things be, and overcome us like a summer's cloud without our special wonder! Yes, they do, and almost every city in the kingdom bears witness to its folly. Oh, what a prolific crop of ridiculous imitations has that triumphal pillar of Trajan's brought forth, itself the worst specimen of the corrupt taste of Imperial Rome. Greece, with her refined art feeling, never could have perpetrated such an invention; and had not Rome, the mistress of the world, with her extensive influence, set the fashion, England and Europe might have escaped.

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* Read before the Liverpool Architectural Society, March, 8 1871, by Mr. James M. Hay.

With regard to beauty of line in itself, I consider that every curve is beautiful more or less according to its intelligent application. The concave is equally beautiful with the convex. The Eddystone lighthouse, designed by Smeaton more than a hundred years ago, is a beautiful object, and at the same time a triumph of engineering skill; and yet that work exhibits in its outline a very decided concave. Planted upon a rugged rock in the English channel, it rises to a height of a hundred feet, and bids defiance to every influence of wind or wave. Enormous strength is its primary and prominent characteristic, but its strength is not that of the uplifted arm, as in the Doric column, but is more akin to that of a gigantic tree, whose wide-spreading roots stretch out around it, and pierce and grasp the solid earth. Smeaton's first concern was to level the rock to prepare it as a platform for the building, and to unite the foundation course of solid blocks of granite securely to it and to each other. Course after course, as they rise above the waters, and block to block are ingeniously dovetailed together and interlocked, so as to form one perfect and compact mass of masonry. Slow and anxious deliberation mark its base gradually increasing confidence each contracting circle, as it rises upwards, till in full assurance it mounts plumb up to the famous lantern light that crowns it.

The tall chimney may be made a pleasing object if intelligently designed, not that it should resemble either the lighthouse or the Classic column. It being the hollow frustum of a cone, such a wide-spreading base as that of the Eddystone would be unnecessary, and would rather convey an idea of weakness. Neither should it be an imitation of the Classic column, having nothing to carry but carry off smoke, and no substance to carry it if it had; besides, the swelling outline of the column would actually convey the painful impression that the influence of heat was causing it to bulge and burst. Nor should it ape, as it sometimes does, the Italian campanile, with which it has nothing in common. It ought in my opinion to be the well-proportioned, tapering shaft, perfectly straight, or slightly concave, or spreading outwards towards the base, the cap high without extravagant projection, and the plan circular or multangular.

Some few years ago a paper (or papers) by an eminent sculptor was published in the professional journals purporting to be a discovery that the ancient obelisk had a decided entasis, or explaining that it ought to have one, and how to construct it. I could not agree with the conclusions arrived at. The obelisk was used in pairs in the gorgeous palace-temple architecture of Egypt, and whether there, or set up as a separate and distinct monument, simplicity of outline and durability were alone considered in its design. It was a monolith of granite, syenite, or other hard material, square on plan, of great height, and tapering straight to a blunted point. It was urged by this writer that, owing to some optical illusion, the side, if made straight, would have a hollow outline, and thereby produce an unpleasing impression of weakness. Instead of weakness, I should say elegance and stability; and if this hollow outline did not seem there from the cause suggested, it would have been in strict accordance with sound taste to have imparted and secured it. The obelisk was a single solid compact block, and stood erect upon the level plain, self-dependent, without base, or pedestal, or footing, and the slightly hollow curve toward the ground would give the very preparation for the union both mind and eye desiderate. Entasis, applied to the obelisk, whether in the imperceptible curve or some of its more exaggerated forms, has no right to be there, structural, optical, or æsthetical; and I am convinced that the further it departs from the straight line, to the same extent does it depart from elegance towards coarseness and vulgarity.

(*To be continued.*)

PARLIAMENTARY NOTES.

Bethnal-Green Museum.—On Friday last, Mr. C. Reed asked the First Commissioner of Works to explain the causes of delay in completing the Museum of Art and Science in the east of London, for which a vote of £20,000 was taken in the year 1867; and whether, out of consideration that that was the only museum provided for the education and recreation of the people east of Temple-bar, an assurance could be given to the House that it would be opened without further loss of time.—Mr. Ayrton replied that there had not been a vote of £20,000 made to defray the cost of the building in question, but that an estimate for that amount had been placed upon the table, and several small sums had been voted as the work went on. In this year's estimates a sum was taken sufficient to complete the building, and he expected to be able in about three months to hand it over to the Department of Science.

The Learned Societies.—Lord J. Manners asked what had occasioned the suspension of the works at the new buildings for the Learned Societies in Piccadilly; and when they were likely to be recommenced, and when finished.—Mr. Ayrton replied that the construction of the building was commenced in December, 1868, and the works were proceeded with till a short time ago, when the contractors suspended payment. A reasonable time was allowed them to resume the works, if they could give security for their completion according to the contract, the period for which was fixed for March in the ensuing year. They failed to do that, and in consequence it became necessary to re-let the contract. He hoped that would be done in the course of a month, and in that case the work might be finished in about eighteen months from the present time.

Cooper's-hill College.—Mr. G. Duff, replying to Mr. Plunket, said it was intended to alter the terms of the prospectus now issued at the office of the Civil Service Commissioners with reference to the Indian Civil Engineering College, so as to make it consistent with the resolution adopted by the House on the 3rd of March.

The National Gallery. — On Monday, on the vote of £75,000 for expenses of the National Gallery, Mr. Bowring expressed a hope that the Chancellor of the Exchequer would explain how the money was to be expended.—The Chancellor of the Exchequer said the money was required to purchase the collection of Dutch and other pictures, a valuable collection, and of much art interest, made by the late Sir Robert Peel. The collection consisted of 77 pictures, and 18 drawings by Rubens and Vandyke, and the pictures included masterpieces of Reynolds and Wilkie. Many other pictures were of the Dutch school, and were masterpieces in their way. The collection was in excellent order, had been selected with great care, included the celebrated picture, the Chapeau de Peille, was complete in itself, and supplied all that was needful in the way of a collection of Dutch paintings. They had been carefully examined by eminent judges, and he was informed on their authority that it was well worth the money to be given for it. Independent of that, it would, he hoped, be no permanent expense to the country. Out of the sum of £70,000 annually voted by the House for the National Gallery, there had been returned to the Exchequer by the Trustees £20,000, and it was highly creditable to them to have so returned it instead of purchasing pictures of doubtful merit. The Government would not ask for a vote for the National Gallery until the £75,000 had been recouped, although he did not say they would not absolutely refuse to purchase works of great merit. It was hoped that in four or five years the amount now asked for would be repaid. He thought they had done better in buying a collection of great value, and thoroughly appreciated by the public, than they would have done by picking up works as to the merits of which competent judges might differ in opinion. They had taken on themselves the responsibility of making the purchase, and he was sure the House would ratify what they had done.—Mr. G. Bentinck protested against an expenditure of large sums on pictures when they were on the eve of discussing largely-increased estimates, proposed in order to guard against possible invasion. He could not understand how hon. members who sat on Ministerial benches below the gangway could agree to such an expenditure. It was all very well for a rich and a great country to indulge in pictures; but owing to recent legislation England had ceased to be great or rich. If he obtained the support of hon. gentlemen opposite he would divide against the vote.—Mr. W. H. Gregory denied that the vote was a wasteful one. When the right hon. gentleman the member for Bucks, asked for a vote of £40,000 to purchase the Blaquiere collection not a voice was raised against the proposal, and he hoped the hon. gentleman would be alone in his opposition. The Government had done well in purchasing a valuable collection which could not fail to improve and elevate the taste of the working classes. He trusted that the superfluous pictures now in their valuable collection would be distributed throughout the kingdom to those provincial museums that might express a desire to have them. There was one class of pictures which this country had not, and that class was that of the Dutch school. The collection of pictures for which the vote was asked was a portion of the late Sir Robert Peel's highly valuable gallery, and many of the pictures were the productions of some of our greatest masters. Among the collection he might advert to a portrait of that remarkable man the celebrated Dr. Johnson. Painted in the first style of art by Sir Joshua Reynolds, it was a portrait of which the nation might be proud.—Mr. Ward Hunt, in supporting the vote, expressed his opinion that the proposed vote could not be considered a waste of money. On the contrary, the object for which it was proposed was a most laudable one, and for his part he should give it his most cordial support.—Mr. Rylands, in supporting the vote, expressed his belief that the collection of pictures in question would not only be advantageous to the National Gallery, but would be a boon to the working classes, who might then have an opportunity of seeing them.—Mr. G. Bentinck explained that he had never disputed the value of the late Sir Robert Peel's taste in pictures; but he thought that when there was such a great demand for the public money, and so much pauperism in the country, it was not a wise and just expenditure.—The vote, after a few observations from Mr. Illingworth and Mr. Alderman Lusk in support, was agreed to.

Building Intelligence.

CHURCHES AND CHAPELS.

Church Extension.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels, held its usual monthly meeting on Monday last, at 7, Whitehall, S.W. Grants of money were made in aid of the following objects:—Building new churches at Clewer, near Windsor, Berks, and Derby, St. Ann's; rebuilding the churches at Easton-in-Gordano, near Bristol; and Ettingshall, in the parish of Sedgley, Staffordshire; enlarging or otherwise increasing the accommodation in the churches at Boughton Blean, near Faversham, Kent; Lacy Green, in the parish of Princes Risborough, Bucks; South Shields, St. Hilda's; and Syston, near Leicester. Under urgent circumstances, the grants formerly made towards reseating and restoring the church at Abthorpe, near Towcester, and towards building the Church at Earl's-court, St. Matthias, Kensington, were each increased. A grant was also made from the School Church and Mission House Fund towards building an iron mission church in the parish of St. John's, Walthamstow, Essex. This meeting was the last in the Society's financial year, and grants amounting to £6,195 have been made in it towards the erection of 32 new churches (26 of which are entirely free and unappropriated), the rebuilding of 17, and the enlarging or otherwise increasing the accommodation in 78 existing churches. The cost of carrying out the above works will have called forth from the promoters of them the large sum of £281,290. The Committee have also granted the sum of £600 towards building 18 school churches and mission houses, but in every case there has been much regret felt at the smallness of the sum voted, through the inadequacy of the funds placed at the Society's disposal.

Ashby, near Brigg.—A Wesleyan Chapel has just been opened at Ashby. The style is Early Geometrical; the material is red brick, with Ancaster stone-dressings; pulpit and communion of pitch pine and mahogany. Accommodation is provided for 170 adults and 30 children; the total cost, including Porrett's warming apparatus and fencing, is about £420. Mr. J. K. James, of Hull, is the architect, and Mr. Whitehead, of Caistor, is the contractor.

BUILDINGS.

Ravensthorpe.—The corner-stone of the new schools in connection with St. Saviour's Church, Ravensthorpe, Dewsbury, was laid the other day. The building, which will be in the form of the letter T, will contain a large school-room, 25ft. 6in. by 20ft.; an infants' school-room 35ft. by 20ft; a class-room 16ft. by 14ft., together with vestibules and passages. There will be large and spacious play-grounds on either side of the buildings for boys, girls, and infants. The principal school-room will be 16ft. high, and the infants' school-room will be the same height. The whole of the internal wood-work will be of red deal, stained and varnished. The style of architecture adopted is Gothic, simply treated, the principal front being towards Church-street, and having a central gable containing a bold triple-lighted window, surmounted on the top by a bold and ornamental bell-turret. The entrances will be at the back of the principal wing of the building. The materials to be used are hammer-dressed Elland Edge wall-stones on the outer face, with tooled local ashlar dressings. The plan has been so arranged that it may be at any future time conveniently enlarged by the addition of another wing 25ft. 6in. long and 20ft. wide. Messrs. John Kirk and Son, of Huddersfield and Dewsbury, are the architects. The entire cost will be about £1,100.

Market Rasen.—The plans for new day-schools in connection with the Wesleyans have been prepared by Mr. J. K. James, of Hull, architect, providing accommodation for two hundred scholars. The style is Early Geometrical; the material being red brick both outside and in, with dressings of Ancaster stone, and enrichments in black, white, and moulded bricks.

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Collectors of Derbyshire topographical works are reminded that the work upon the history and antiquities of Morley Church, written by the late Rev. S. Fox, M.A., was left complete at the time of his death, and Messrs. Bemrose and Sons, of Derby, have undertaken its publication "for subscribers only."

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

G. H.—It was a mistake of the printer's last week to say that the illustration of the Church of Lubentius was given.

Queen's Hotel, Aberystwith.—In last week's Building News we should have stated this hotel was the joint production of Messrs. C. F. Hayward and H. D. Davis.

M. Carpentier.—The required numbers can be had. The photograph forwarded was too small, and not of sufficient interest for insertion. Good line drawings of really good modern buildings in Belgium would be acceptable.

John Russell Walker.—The prices of A. Dürer's engravings vary according to their state of preservation, their rarity and the quality of the artistic work they may contain. Sometimes you can buy one for a few shillings—others, again, are worth as many pounds.

T. C. Wilberfoss.—We are sorry and surprised that you did not know the time for adjudicating the prizes for the "Sketch Book" had arrived. We announced it on the 17th February, and the poll remained open for nearly a month. A large majority of the competitors voted.

Received.—F. H. T., T. W., X., M. H. and Co., R. W. S., H. D. R., S. H., S. D., R. L. K., C. H. B., C. L. W., E. W. A., J. J., W. E., J. N., J. P. S., C. B. A., W. B., J. A. Ast, E. W., A. J.

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Correspondence.

A PLEA FOR THE ROUND ARCH.

To the Editor of the Building News.

Sir,—I have long noticed with pain and surprise the almost total disuse of the various round-arched styles in England, more especially in the numerous churches which have been erected within the last few years. And yet for such a purpose these styles have a certain dignity and propriety which renders them well worth examination. When the Gothic revival began men seem to have rejected the round arch as savouring too much of the Classical styles. But there are many styles of architecture, each of which can show many fine examples, which solely employ the round arch, the Byzantine, the Rhenish Gothic, the Romanesque, the Norman, the Early Spanish, and some styles in the south of France.

One merit these styles certainly possess, that they admit of a greater simplicity of treatment. The pointed arch, to show its full beauty, requires elaborate and costly moulding; the round arch may be very beautiful with hardly any ornament at all.

There is an objection generally urged against the employment of the round arch—the want of height in this feature. But this difficulty would scarcely be felt in modern practice. The majority of churches are not built of a great height; and how often do we see in recent churches in th Pointed style an arcade of which the bases of the columns are disproportionately large, the columns themselves dwarfed to nothing, the capitals coarsely carved in a exaggerated style, the arch so flat as to lose all its beauty and proportion, and, to crown all, a clerestory of mere quatrefoils and cinquefoils without any grace or dignity. Yet in this height an arcade could be raised in the round-arched styles which should be of the most perfect proportion.

The towers, it is true, might offer some difficulty, but not more than a little thought would overcome. The campaniles of Italy and the towers and domes of the Rhenish churches would afford many suggestive hints.

Perhaps the real reason why these styles are no longer employed is, that it would require more thought and consideration to introduce them than our busy modern architects can well afford. But it is a great pity that hardly anything has been done towards this, and we may at least hope one day to see these, or some of these, noble styles naturalised in England.—I am, &c.,

K.

TIN-LINED PIPES.

Sir,—I see there is controversy in your paper in regard to tin-lined lead pipes. Such pipes have been used to some extent in this place, but have not in all cases proved satisfactory. The causes of failure seem to have been that too light pipe was used to withstand the pressure of the water head; about 75 pounds per square inch, and also the breaking off from the lead of the tin lining, by bending the pipes, and consequent weakening of pipes at such parts. I would like to be informed if brass piping is used for water to any extent in England? and if so with what degree of satisfaction.

C. H. Burleigh.

Worcester, Massachusetts.

LEICESTER MUNICIPAL BUILDINGS.

Sir,—Your correspondent "A. B. C." complains, I think, rather unnecessarily, that the Committee of the above demand £1 deposit for the instructions. He seems to forget that this is to be returned to every architect who may submit a design, so that, after all, it is not so great a hardship, and seems only intended to limit the number of applications for copies, which of late has, in most cases, reached a most preposterous figure. A very easy remedy is also at hand. I have been simple enough, as your correspondent puts it, to pay the deposit and get a copy, and am quite ready to let any one or more other intending competitors of respectability to use same on payment of a share of the deposit, which will thus be reduced to the merest trifle. The business seems a promising one, and the premiums rather better than usual. But there are certain objectionable conditions as to the remuneration to be paid in case of the employment of any of the competing architects, which, in my opinion, ought to be modified before any architect of character should engage in the competition. For instance, the 5 per cent. commission is to include not merely "all the services usually rendered by the architect," but also the "schedule of quantities, traveling expenses, attendance, and other matters or things arising out of or connected with the erection and completion of the building." In other words, the architect is to do the surveyor's business as well as his own for the same fee, and as there is scarce any limit to the number of attendances that may be required, it may leave but 2 or 3 per cent. for the regular business ordinarily paid for by the 5 per cent. Now, I think it quite possible that these and other objectionable conditions which have appeared in recent competitions arise from ignorance on the part of the promoters, and that by proper representations a modification might be effected. The Institute of British Architects, which ought to take cognizance of all such matters, has, up to the present, neglected to do so, or to advise such public bodies as the Corporation of Leicester as to what would be just and reasonable conditions, and therefore we need not wonder that more and more objectionable ones are put forward every day. I shall be glad indeed if the recent changes in the administration of that body tend to greater efficiency in such matters. In the meantime I would suggest that all the architects who would be disposed to compete for this work if the conditions were fair should meet and address a suitable representation to the promoters, which, if properly done, the latter could not well disregard.—I remain, &c.,

F. R. I. B. A.

P. S.—Any of your readers wishing to communicate with the writer relative to the above suggestions can do so by addressing to him at the office of the Building News.

BATH STONE.

"S. George's, Bloomsbury.—The spire of S. George's, Bloomsbury, is now undergoing repairs. The figures at the base of the pyramid were so dilapidated as to endanger the limbs and lives of those whose business took them through the churchyard below. Is this another instance of the unsuitability of Bath stone in a London atmosphere?"—[p. 208.]

Sir,—Surely the writer of this paragraph must be mistaken as to the stone used in S. George's, Bloomsbury, Church? It was built long before the introduction of Bath stone into London, and of the material then judiciously employed, namely, Portland stone. What was the real extent of decay I have not heard. A neighbouring ecclesiastical edifice, the Baptist chapel in Bloomsbury-street, is also under repair; its stonework is of Caen stone, which received some years since (1858) an application of Ransome's fluid.

Hart-street.

SMITHFIELD DRINKING FOUNTAIN.

Sir,—I do not know whether any official notice of the decision concerning the above has been conveyed to you. If not, perhaps I may be allowed to say that the design submitted by me has been chosen by the Markets Improvement Committee, and that on Thursday last I was directed to proceed with the works.

My design was entitled "Peace," and consists of a central statue of Peace, which is to be in bronze; around the statue are grouped the fountains and drinking basins, &c. Above this rises a dome supported on four angle piers; upon these piers, under canopies, are statues of Faith, Hope, Charity, and Temperance.

Messrs. Farmer and Brindley are to do the sculpture, carving, &c., and Messrs. Manley and Rogers have undertaken the structure, steps, &c.

I remain, sir, yours, &c.,

Francis Butler.

19, Marylebone-road, N.W., March 22, 1871.

P.S.—Upwards of forty designs were submitted.

ALBERT DURER'S WORKS.

Sir,—Allow me to express my deep obligations to you in grateful and heartfelt thanks for the very beautiful, accurate, and original-like reproductions of Albert Dürer's wondrous drawings you have already presented to me, in common with your other readers, and to hope that you will not allow the seemingly or negatively implied want of appreciation of many of your subscribers, together with the positive ditto of a few barbaric Philistines (in the absence of frank acknowledged appreciation and general approval from the great body of us), to divert you from your admirable purpose of so abundantly administering wholesome and combined pleasure and instruction to the by no means less cultivated or unenlightened section of your supporters by possessing us with what we otherwise might never have an opportunity of seeing.

I trust you will still continue from time to time—and these not far apart—to give us another and another of these universally-admired magical creations of old Albert Dürer, who was Art's high priest and Nature's humble worshipper. Those silent pictures of his have an influence which will make itself felt on every beholder of them. I am, &c., J. M. A.

Sir,—I hope the fact of some of your readers not appreciating the reproductions of Albert Dürer's works which you are giving in the Building News will not induce you to stop such a good work, for I am sure the majority of your subscribers do appreciate your efforts to give examples of good art in a cheap form, and would much prefer a certain proportion of the illustrations to be of such a character than to have nothing but modern buildings, which are not, as a rule, of much value, especially to students, and I believe students form a large number of your supporters. I may add that the sheet you gave from V. le Duc was excellent, and has been fully appreciated. I am, Sir, &c.,

A Member of the Architectural Association.

Sir,—I am sure that all lovers of genuine art will feel highly indebted to you for your admirable reproduction of the works of Albert Dürer; and I sincerely trust that you will be induced to continue their issue. It ought to be regarded as a very great boon.

Arthur H. Brown.

Brentwood, March 20, 1871.

Sir,—I sincerely trust, as an old contributor, that you will continue to favour us with the reproduction of these valuable engravings in the Building News, and, speaking for myself, fail to see why they should not have a place, and that a foremost one, in an architectural journal. And further, I trust that, now the fine weather is coming in, we will have them oftener than as yet.—I am, &c., John Russell Walker.

Sir,—It has occurred to me that if your valuable reproduction of Albert Dürer's engravings were printed on tinted paper, such as appeared in the Building News some years ago, they might have a more satisfactory appearance. The contrast between the engraving and the paper seems to me unnecessarily strong, and gives the picture a harshness of expression which detracts from its beauty. I hope the architectural profession will "assume a virtue if they have it not," and welcome the re-appearance in your journal of the works of so celebrated an artist.—I am, &c.,

Trafalgar-street, Bradford. J. Ledingham.

[Experience has taught us that black upon white is the very best way to print books or engravings. —Ed.]

Sir,—I notice with regret in your impression of the 17th inst., that some of your readers do not appreciate the *bonne bouche* you are favouring us with in the reproduction of Albert Dürer's engravings.

I think the *Northampton Mercury's* comments most unfounded and unfair, more especially as your first impression was issued during such unpropitious weather, in order to comply with your previous promise.

It would be far better for the *Northampton Mercury*, and your dissatisfied readers, to cultivate what they are at present profoundly ignorant of—a taste for the beauties of the old masters. I think, then, they would not be so ready to condemn what they are now unable to admire.

I trust you will not think of discontinuing these engravings without giving others an opportunity of recording their opinions.—I am, &c.,

Cambridge, March 18. A. Stanley Allum.

Sir,—I am one of those who have read with alarm the paragraph in your last issue, offering to discontinue the reproduction of Dürer's works, provided you can be satisfied that a fair proportion of your readers would prefer illustrations of buildings.

As an old reader of the Building News, I would like to say that I have never met with anything, among all the gems in your pages, more interesting and instructive than your specimens of this great master. How anyone can find an objection to urge against them I am at a loss to understand; unless, indeed, it is that the exquisite skill and patient labour stamped plainly in every line convey intolerable reproach to the inventors of the slovenly, hasty drawings so frequently met with in the present day.

I am perfectly certain that those who fail in appreciating Dürer's works form a very insignificant minority of your readers. To the great majority of those who delight in studying your journal, the reproduction of these works is an immense boon. To those who have no opportunity of seeing the original, your illustrations are simply invaluable. I therefore earnestly hope that the great favour you are conferring on the larger portion of your readers may not be interrupted by the ungrateful murmurs of a few.

Douglas, Isle of Man. J. Cowle.

Sir,—I cannot refrain expressing my thanks for your admirable reproduction of some of Albert Dürer's choicest works, and can only say that I would like to see them come oftener. To be able thus to possess these perfect specimens of the works of one of the greatest men of his time is a boon to all lovers of art. I regret to find, from the current number, that some of your readers do not sufficiently appreciate these inestimable reproductions, but hope that the value others set upon them will encourage you to give us more of these art treasures.—Yours, &c., T. Gatenby.

Darlington, March 22nd, 1871.

Sir,—I am surprised beyond measure that any subscriber should have expressed aught but gratitude to you for the reproduction of Albert Dürer's works; and am sure that any person possessing the least spark of artistic feeling must regret that you should for a single moment labour under the impression that your efforts are not highly appreciated. Pray continue them, in spite of grumbling from any number of poor souls who fail to see their value to architects! To such blind ones I would not breathe one word of reproach, for we cannot expect more from a man than he knows, nor is it reasonable to expect melodies from a weaver Bottom, though he may say:—"I have a reasonable good ear in music, let us have the tongs and the bones."—I am, sir, your obedient servant, R.

Sir,—I was sorry to see from your remarks to-day that some of your readers do not appreciate the Dürer drawings, and beg to offer my testimony to you for placing copies of such valuable works within reach of people who could never even see the original. I am not an architect, and, like many of your subscribers, take the Building News for the articles and illustrations, which contain instruction on art generally. I am sure those who are fond of churches need not complain of the scarcity of examples engraved by you. We should educate our taste, not only by good examples in the particular branch of art we follow, but by laying up a store of the best works for reference, whatever their special purpose. Allow me also to thank you for your praiseworthy efforts to give your readers a manual of art history (the "Monuments of Art"), which I, for one, have long felt the want of; but might I suggest, if practicable, that the figures might be drawn a little larger? The work would thereby be considerably enhanced. Hoping that the Albert Dürer drawings will not be discontinued.—I am, &c., W. Jones.
3, Cuthbert-terrace, Lower Broughton, March 18th.

Sir,—But for the few remarks in last week's issue, I could scarcely credit that there is a wish among your subscribers for the discontinuance in these pages of the well-produced copies of some of the most interesting works of Albert Dürer, or that any should even require to be impressed with the excellences of such a master.

For my part, I echo the thanks expressed by "A Country Subscriber," at page 56, and cordially agree in his sentiments there. I have looked with eagerness during several weeks for the issue of the second of the series of copies promised us, which has just been given.

I feel convinced you will have assurances of the gratification it will be to many, beside myself, to receive high class subjects such as these are, in lieu of illustrations of designs in modern architecture, the chief merit of which is that they display (usually in bold lines) the boldness of their originators' ideas as to the mixture of chamfers, spots, dots, and notches, combined with examples of what torturing effects of exterior surface decoration may be produced by an indiscriminate jumbling of "black bricks and white, red bricks and gray."—I am, &c. H. B. B.

Sir,—I have read in yesterday's issue with great surprise that some of your readers disapprove of Albert Dürer's works appearing in your paper. If these gentlemen really possess the power of appreciating the noble and good, I would advise them to say nothing, but carefully study those works as they appear, and in time they will have reason to thank me for this advice. Would it be considered too much to request you to throw off an impression of these valuable works and supply them at a proper price to your readers, to preserve separately?
An Eleven Years' Subscriber.
Edinburgh, 18th March, 1871.

Sir,—By all means let us have as many of Albert Dürer's glorious engravings reproduced as your "silver" will allow, and be not persuaded by those who underrate their worth as works of art. With the valuable process of photo-lithography at command, it is a wonder that they have not been copied before this. Certainly with such successful results as have attended those you have already given us—the copies being, as you justly observe, more perfect than the originals—it would be indeed a disappointment to be forbidden the rest at the behest of those who would probably advise otherwise were they to appreciate the value of Dürer's engravings as they deserve. That appreciation must, however, like with most things, be arrived at by study and familiarity with the style. At one time I was insensible to their excellence, but I cannot but have confidence that their recognition will follow a closer acquaintance. Let me hope, sir, that you will carry out your original intention, and place as many copies of Albert Dürer's works in our hands as opportunity will allow.—I am, sir, yours, &c., R. C. E.
March 18, 1871.

[We have selected at random the above letters from others on the same subject which have come to us from different parts of the country. It is encouraging to know that our endeavours to give *fac simile* illustrations of the greatest art engraver the world has produced are likely to be appreciated. We shall, as promised at first, give occasionally specimens of the master's work, and also "Monuments of Art," as promised about the same time.—Ed.]

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The Poor Law Board has approved of plans forwarded to them by the Belper Board of Guardians for the erection of new infectious wards at the Belper Union.

The statue of Charles II. was placed in Westminster Hall on Tuesday evening. The figure, like all its fellows, is in a standing position, and comes next to that of Charles I.

Intercommunication.

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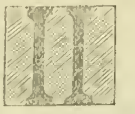
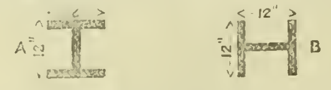
QUESTIONS.

[2166.]—**Ventilation.**—What is the maximum velocity at which fresh air may be allowed to enter an apartment (near the floor, through openings covered on the inside with perforated zinc) without occasioning a draught disagreeable or perceptible to the occupants of the room?—J. O.

[2167.]—**Flitched Beams.**—How does a flitch plate strengthen a wood beam, and to what extent? I should like to know the *rationale* of the matter. How is the breaking weight of a girder, such as that shown in sketch, ascertained by calculation? The dark parts are rolled iron girders, the remainder of wood, the whole bolted together.—J. O.



[2168.]—**Strength of Girders.**—I want to know which way a rolled girder of double tee or H section, should be placed, so as to get the greatest amount of carrying capacity out of it? Ought it to be fixed as at A



or B?—¾-inch metal all over. The span to be used is 20ft. clear between piers. If it will carry more in one position than the other, some correspondent will perhaps oblige me by stating the difference, and how such a section is worked out by formula?—Girder.

[2169.]—**Ventilators for Chimney Breasts.**—In his last week's letter on sunlights Mr. T. C. Sorby mentions "Boyle's Chimney Breast Valves." Will any one explain their construction and action? I believe Dr. Arnott invented a ventilating valve. If so, what is its description? Since the appearance of "E. L. G.'s" comments on "bloody houses" I have been trying to fix up a ventilating apparatus for myself, but I find the down current of smoke is a difficulty, especially when the wind is in certain quarters. What should regulate the size of aperture into chimney flue, and what is the most suitable size for a room 12 by 12 by 12? My present fixing is tolerably successful, and after a few more days' trial I will send a description of it. I am under the necessity of removing it while the chimney is being swept.—Fin Mot.

[2170.]—**Sounding Boards.**—Having been called upon to construct a sounding-board in a church, in which the acoustic properties are very defective, we should feel obliged by any of your subscribers narrating any experience they may have had relating to the construction and effect of sounding-boards generally. The unusual nature of the commission will, we are assured, be sufficient to warrant this request from our professional brethren.—D. and U.

REPLIES.

[2136.]—**Sole Contracts.**—In point of economy and safety your architect advised you rightly, unless the villa you intend building is to be situated in a remote part of the country, and of small dimensions, the total cost not exceeding £500, for the following obvious reasons:—1st. That the system of sole contracting for dwelling-houses is not generally adopted; therefore those who do undertake sole contracts add a percentage to the various branches of work which they sub-let, or get a discount from the sub-contractors as an equivalent. 2nd. It cannot be expected that a contractor who is practically conversant with only one or at most two, departments of trade can efficiently superintend four or five departments differing from his own; hence he is taken advantage of by his subs, whether as contractors or employés, and these men, not being responsible to the architect, are less careful about the execution of their work. For these reasons, and others that might be adduced, sole contracts are not desirable in Scotland, as they neither benefit proprietor nor architect.—A. S.

[2136.]—**Sole Contracts.**—In "X.'s" reply to my letter, I think it would have been better if he had proved more and said less, before he pronounced judgment, for, according to his own showing, he only differs from me in *one* point, which is that of "the sole contractor adding 5 per cent. to the several sums for his trouble." "X." denies this, and says "sole contractor is satisfied with his own profit on his own work in all cases." Which infers that this magnanimous sole contractor of his, a pure creation of "X.'s" imaginative brain, is satisfied to give instructions and direct fully three-fourths of the work, nobly taking all responsibility of the same should failure occur in the proper execution of the work; and all this he does for no remuneration whatever, which is perfect twaddle. I say this percentage question is a recognised fact, and all architects and builders acknowledge it, and I beg to inform "X." that they are perfectly "truthful assertions," gathered from an experience of twenty years amongst none but "respectable" architects and builders. Finally, I would advise "X." not to read Mr. Bermingham's capital paper, but to have it read and explained to him by some competent person, as he is evidently ignorant of its meaning, as there is not one particle in it which applies to the question at issue.—Surveyor.

[2142.] — **Communication with Gardener's House.**—I should recommend the system of communication mentioned by the writer, seeing the distance is so great. There is a patented process in existence at present, I believe, whereby the handle of the bell, upon being pulled, is made to exhaust as much air in the tube as the forcing in at the other end, where the bell is, will cause it to ring. I believe it is simple, and I should think practicable, but cannot speak from experience. The offices used to be at 157, Cheapside.—Surveyor.

[2148.]—**Antill's Patent Trap.**—"A Beaver" will gain all the information he requires by applying to Mr. B. Finch (the manufacturer), 181, High Holborn. These traps are the best that have come under my notice: they are perfect in every respect.—D. Haylock, Architect, 12, Meyrick-villas, Clapham Junction.

[2153.]—**Damp.**—"Gay's solution" is often now used for the purpose—applied as a common paint, but the plastering has to be made hot—cost about 2s. 6d. per super yard. It would be best, I should think, to strip the old plastering—re-plaster with Portland cement, and a finishing coat of Parian cement; or, otherwise, to line the wall with matchboarding, leaving a space between the boards and the wall.—Wiltshire.

[2154.]—**Isometrical Drawing.**—"T. Sopwith on Isometrical Drawing" was published by Weale, 59, High Holborn; but I will ask the author and reply afterwards if the same can now be had, and, if possible, where? Respecting "the clumsy imitation," and the two minutes of "P. E. M.," I shall give him fifty times two to produce in "perspective" a drawing of "His Britannick Majesty's Palace of Whitehall, the Charing-cross side," or one of "Elevation et Coupe Scenografique du Chasteau de Caprarole," or anything of equal interest as a drawing. Nothing, I hold, can equal isometrical drawing if correctly executed.—M. G.

[2156.]—**Old and New Brickwork.**—I would advise "Tyro," in carrying up his new chimney breast, not to spare the old work, but to cut away as much of it as will ensure the safety of the new work. Treat it as though the old party-wall did not exist, and in no case let the face of old wall form one side of new flue, unless he wants the rooms to be continually filled with smoke hereafter.—Surveyor.

[2161.]—**Timber.**—The deals named are—of fair quality—equally as good for durability and strength as the best Baltic log timber, and now that deals and battens are imported of so many various sizes, they are coming generally into use for carpenter's purposes. Many architects now make it a clause in their specifications that where deals or battens can be used for joists, rafters, &c., preference is to be given thereto.—Wiltshire.

[2163.]—**Water Closets.**—The most suitable and cheapest water closets for school purposes "An Old Subscriber" can get are Batcheldor's patent trough closets, which are perfectly efficient for sanitary purposes, and can be had from one seat up to any number he may require.—W. W. E.

[2163.]—**Water Closets.**—Your correspondent, "An Old Subscriber," asks what is the best form of closet for schools? I would refer him to your No. of January 8, 1869, containing a description of my ash-closet system, which I have fixed in lieu of water-closets here—to the great satisfaction of those interested. I shall be glad to furnish him with further particulars.—J. C. M., Bury-road, Manchester.

[2163.]—**Water Closets.**—I have always found that Jenning's valve closets answer best, whether for public or private buildings. The pan and trap being formed of one piece of earthenware ensures cleanliness, and no service box, cranks, or wires, being necesssary, renders it simple in action and almost noiseless. I have known Jennings' closets in use at railway stations a long while, without any attention One cistern will supply any number.—Wiltshire.

◆

LEGAL INTELLIGENCE.

The Ramsgate Libel Case.—Mr. Edward Welby Pugin was indicted last week at the Kent Assizes for unlawfully publishing a defamatory libel of and concerning Mr. John Barnet Hodgson, at Ramsgate, on the 17th, 18th, and 22nd July last. In reference to this case the counsel instructed for the prosecution stated that all matters in dispute between Mr. Pugin and Mr. Hodgson had been referred to arbitration. Mr. Pugin having, very properly, written a letter, fully and without reserve with drawing all imputations on Mr. Hodgson's character, the learned counsel now applied for leave to withdraw the prosecution, and for the witnesses to be discharged from their recognizances. The counsel for the defence concurred in these observations, the application was granted, and the matter terminated.

Sale of a Brickfield.—Alleged Perjury.—This case, referred to recently in the Building News, came up for hearing on Tuesday morning last, at the Kent Spring Assizes, when the grand jury returned bills as follows on the charges against the Rev. W. English:—True bill for unlawfully and fraudulently obtaining property by false pretences; true bill for suborning George King to commit wilful and corrupt perjury; no true bill for conspiring with William Fry, Thomas Willis, and other parties, for Fry to make a false affidavit to be used before the Court of Queen's Bench on the hearing of an application for a rule *nisi* in the cause of Bawden *v.* English; no true bill for unlawfully and corruptly suborning Alfred Butler to commit wilful and corrupt perjury; no true bill for having himself committed wilful and corrupt perjury. A writ of *certiorari*, removing the case to the Court of Queen's Bench for trial, was granted.

Forgeries by a Middlesborough Architect.—At the Middlesborough police-court on Tuesday week, James Taylor, an elderly man, described as an architect, was charged with forging and altering three bills of exchange for £15 1s., £20, and £23. From the evidence, it appeared that the prisoner had been in the employment of Mr. John Hill, a contractor and builder, for the last three years, off and on, and had forged Mr. Hill's name on the bills of exchange, which he then discounted. On Wednesday week the prisoner was charged with forging two other bills of exchange, one of £20 1s., purporting to be accepted by John Hill, of Middlesborough, and Robert Hutchinson, of the same place; and the other for £23 17s. 6d., purporting to be accepted by Mr. Hill. The prisoner was committed on all the charges, bail being refused.

Apprenticeships.—In the action Whincup *v.* Hughes, brought by an apprentice for money had and received against his master's executor, the master having died within a year from the commencement of the service (which was to have been for six years), it was held by the Court of Common Pleas that, in the absence of any express provision to that effect in the indenture of apprenticeship, no portion of the premium could be recovered.

WATER SUPPLY AND SANITARY MATTERS.

A Water-supply Reservoir for Moortown.—The Corporation of Leeds, in order to provide a good and constant supply of water to the inhabitants of Moortown, are about to construct a high level reservoir on a suitable site a short distance from Heath Nursery, and just within the borough. The plans for the reservoir, which have been designed by Mr. Filliter, the Borough Waterworks Engineer, show that it will be formed partly by excavation and partly by embankment, and that the length will be about 130 feet, and the width about 90 feet. Adopting a plan carried out with so much success at the Woodhouse Moor reservoir, the water will be protected from impurities by an arched and groined roof supported on brick or stone pillars, and having iron girders and tie-rods. By the use of concrete and puddle both the floor and the covering of the reservoir will be constructed in such a manner as to be water-tight. The water will be forced through an eight-inch main, from the Headingley pumping station to the reservoir. A portion of this main has already been laid down as far as Laurel Cottage, and by the time the reservoir is completed the rest of the main, about a mile and a half in length, will be finished. The storage capacity of the reservoir will be about three-quarters of a million gallons.

The A B C Process at Leamington.—The Leamington Local Board have notified to the proprietors of the A B C process that, unless the unwholesome condition of the works be remedied, they will be compelled to take legal steps to put a stop to them. The *Lancet* commends this resolve to the consideration of the Metropolitan Board of Works, with a view to inquiry whether sufficient guarantees have been taken against the creation of a similar nuisance at the works the Company have leave to erect at the northern outfall.

The Proposed Constant Supply of Water in London.—The London correspondent of a provincial paper says that each London householder, at least in the Westminster district, has been favoured or troubled with a well-printed paper, the object of which is to stir up the householders to petition against the Government Bill for compelling a constant supply of water. The argument used is that the constant supply will involve increased pressure, and that increased pressure may endanger the water-pipes, and the house of every gentleman will be brought to grief through the pipes which are built in walls and behind ornamental fittings being obliged to be taken down; and also expensive valves and waste-preventers will have to be supplied to cisterns and water-closets. Men suddenly discover that the world is coming to an end when a proposal is made to secure so simple a thing as a constant supply of water in the homes of the poor. The gracious warning is quite anonymous; it no doubt proceeds from the water companies, who are doing all this good by stealth.

Our Office Table.

"Renovation" of the Woodwork in S. George's Chapel.—The *Observer* last week contained the following alarming statement in its account of the arrangements for the wedding of the Princess Louise:—"Amongst the other preparations made in S. George's Chapel for the forthcoming event, no one could fail to notice that the whole of the various knights' stalls has undergone renovation." With a full appreciation of the meaning of the word, we are curious to know the nature and extent of the "renovation" referred to.

Temperance Permanent Land and Building Society.—At the recent annual meeting of this prosperous society, held at the Terminus Hotel, Cannon-street, the directors' report showed that during the year 12,366 new shares were issued, increasing the total number issued to 108,973. The subscriptions on investing shares amounted to £173,000, and £58,000 was repaid to members. The deposits were £45,000, and the amounts repaid in the same department £54,000. During the year £176,000 was advanced. At the close of the year the principal accounts were as follows:—To the credit of investing members for subscriptions, £650,000; for profit, £60,000; at the credit of depositors, £123,000; secured on mortgage and interest due thereon, £740,000; cash at bankers', £57,000; invested in Consols, £20,000; total assets, £900,000, being an increase of more than £100,000 during the year.

Institute Prizes.—A correspondent says:—"It is very remarkable how few competitors there are, either for the Institute or Royal Academy prizes. One cause is, no doubt, the things not being properly advertised; out of London nothing is known about them. For most of the Institute prizes last time there was only one competitor!"—[On another page will be found the particulars and conditions of prizes, &c., in connection with the Institute for 1871-72.—Ed.]

Completion of S. Paul's Cathedral.—The second silver-gilt chalice and paten for S. Paul's (the gift of Minor Canon W. Sparrow Simpson) are, we understand, now ready, and will be used for the first time on Easter-Day. The manufacturers, Messrs. Lias and Son, Salisbury-court, Fleet-street, will be happy to show them to clergymen and architects, on presenting their cards, next Tuesday and Wednesday, between the hours of ten and five.

Appliances for Graining Wood.—A correspondent ("W. M."), referring to the article on "Decorative Processes," which appeared on February 10th, p. 113, complains of what he considers the partial and one-sided manner in which "An Experienced Workman" describes some inventions for graining wood. He complains that while one apparatus was described with elaborate minuteness, and specific directions were given for its use, the other roller machine (the invention of which our correspondent attributes to Mr. Titterington) was "condemned wholesale, and its inventor spoken of in a tone of insolent contempt." "W. M." conceives that some personal feeling must have dictated "An Experienced Workman's" remarks on this point, and were this surmise a correct one, the strong terms of condemnation which our correspondent uses would be justified, but we have no reason to suppose that our contributor was actuated by any improper motive.

Institution of Surveyors.—At the ordinary general meeting, held on Monday evening, the 13th inst., the following donations to the library were announced—T. Morris's works, as follows:—"Clue to Railway and other Compensation," "A House for the Suburbs," "Outline of Perspective," "British Carpentry and Gothic Roofs," by the author. Papers were read by Mr. W. Sturge and Mr. J. Oakley, on "Tithes and Tithe Commutation." A discussion followed, and a vote of thanks was unanimously passed to the authors of the papers. The following candidate was balloted for, and declared duly elected:—As Associate, Thomas John Robert Davison, Bedford Office, Montague-street, W.C. The next meeting will be held on Monday evening, the 27th inst., when a paper will be read by Mr. Morgan, on "The Results of Sewage Farming at Barking."

The Dilapidation of York Minster.—Those who are acquainted with York Minster will remem-the south transept, which is the work of the thirteenth century, and was erected by Walter de Grey, one of the archbishops of York. It has been for some time surmised that this portion of the building was in such in a dilapidated condition as to require early attention, in order to insure its preservation. The Dean and Chapter have consulted Mr. G. Street, of London, who has made an examination of the south transept, the result of which was to prove that the conjectures above alluded to were well founded. An appeal to the county for funds is probable.

MEETINGS FOR THE ENSUING WEEK.

Monday.—*Institution of Surveyors.*—"On the Results of Sewage Farming at Barking." By Mr. Morgan. 8 p.m.

Tuesday.—*Institution of Civil Engineers.*—(1.) Discussion on papers read, viz., "On Clevedon Pier" and "On Viaducts on Cambrian Rail ways." (2.) "Description of Two Blast Furnaces, erected in 1870, at Newport, near Middlesborough." By Mr. B. Samuelson, M.P., M.Inst. C.E. 8 p.m.

Wednesday.—*Society of Arts.*—"On the Patent Laws and their Administration, with a View to the Adoption of Practical Amendments." By Mr. A. V. Newton. 8 p.m.

Social Science Association, 1, Adam-street, Adelphi.—"On the Report of the Royal Commission on the Sanitary Laws." By Mr. W. H. Michael. 8 p.m.

Thursday.—*Society for the Encouragement of the Fine Arts.*—Dramatic Readings. By Mr. J. W. Walton, F.R.G.S. 8 p.m.

Saturday.—*Museum of Practical Geology, Jermyn-street, St. James's.*—The Swiney Lectures on Geology. Lecture IV. By Dr. Cobbold, F.R.S. 8 p.m.

Chips.

The South Kensington Station of the Metropolitan District Railway is being enlarged to increase the accommodation of visitors to the ensuing International Exhibition.

The Metropolitan Asylums Board on Saturday last resolved to purchase 6½ acres of land at West Brompton, at a cost of £12,000, and to prepare it for building at a further cost of £2,000, in case it should become necessory to make additional provision for small-pox patients.

A tramway is to be laid down between Highgate and the City. A commencement of the works has already been made in the City-road.

Provisional orders for the construction of piers at Redcar and Coatham have been granted by the Board of Trade.

Mr. Thompson, architect, of Bishop Auckland, has been elected a member of the Board of Health of that town.

Funds are being collected for the erection of a new Wesleyan chapel, at Alvaston, Derbyshire.

New premises for Messrs. Elkington, of electro-plating fame, are in course of construction in Regent-street.

It has been resolved to erect a new workhouse at Leyburu, in conformity with the requirements of the Poor Law Board.

M. Schneider, late the President of the French Logislative Assembly, and the sole proprietor of the celebrated ironworks at Creusot, has been on a three days' visit to the ironworks of Middlesborough, including those of Messrs. Bolckow, Vaughan, and Co., and Messrs. Cochrane, Grove, and Co.

Timber Trade Review.

Prices, March 21.—Per Petersburg standard.—Gefle mixed yellow, £9 15s. to £11; ditto 3rd yellow, £8 15s. to £10; ditto 4th yellow, £8; Gothenburg 3rd yellow, £8; ditto 4th yellow, £6 15s.; Hudikswall 1st yellow, £10 10s.; ditto 2nd yellow, £8 to £9 15s.; ditto 3rd yellow, £8 to £9 10s.; ditto 4th yellow, £8 15s. to £9; Laurvig white, £5 10s.; Munksund 1st yellow, £9; Petersburg 1st white, £8 10s. to £10; ditto 1st yellow, £11 5s. to £12 15s.; Skutskar mixed yellow, £9 15s. to £10; ditto 3rd yellow, £8 to £8 5s.; ditto 4th yellow, £7 5s. to £7 15s.; Sundswall mixed yellow, £7 15s. to £8 15s.; ditto 3rd yellow, £7 15s. to £8 10s.; ditto 4th yellow, £7 5s. to £8; ditto mixed white, £8 10s.; ditto 4th white, £7; Skonvik mixed yellow, £9; Skelleftea mixed white, £7 10s.; ditto 3rd white, £7 5s.; ditto 4th white, £7; Soderham mixed yellow, £10 10s.; ditto 3rd yellow, £7 10s. to £8 10s.; ditto 4th yellow, £7 10s.; Tornea mixed yellow, £7 5s.; Wyburg 1st yellow, £7 15s. to £9; Wrfst a Warf mixed yellow, £9 to £9 5s.; ditto 3rd yellow, £8 to £8 10s.; Bathurst 2nd pine, £10; Quebec pine, 12ft. 3 × 11, 2nd floated, £12; 2nd dry floated, £12 10s.; 3rd floated, £9 10s.; 3rd dry floated, £9 to £9 10s.; 4th dry floated, £7 15s.; Saguenay 3rd bright pine, £8 5s. to £9; ditto 2nd red pine, £9 to £10 10s.

Per 120 12ft. 3 × 9.—Bathurst unsorted spruce, £13 5s.; Miramichi unsorted spruce, £12 5s. to £14 5s.; Quebec 1st spruce, £18; ditto 2nd spruce, £14 10s.

Per 120 12ft. 2½ × 6½.—Christiana yellow, £6 15s. to £7; ditto 3rd yellow, £5 5s.; Dram 3rd yellow, £6 10s. to £7; Sannesund yellow, £7 to £7 5s.; ditto white, £5 15s to £6.

Timber per load.—Memel Manerlatten, £3 5s. to £3 6s.; ditto 2nd, £3 10s.; Sundswallfir, £2 10s.; Quebec birch, £2 15s.; ditto oak, £4 10s.; ditto hickory, £4 5s. to £4 10s.; Stettin oak, £4 10s.

Trade News.

WAGES MOVEMENT.

Threatened Strike of Joiners on Tyneside.—Another difference has arisen between the men employed in three shipyards on the Tyne and their masters with reference to wages. Last summer an agitation was got up for an advance of three shillings per week, when a compromise was agreed to, the men accepting an advance of 1s. The question has now again been mooted, a deputation of workmen having waited on Messrs. Mitchell and Richardson, and demanded another advance of three shillings, to which the masters decline to accede. They, however, expressed their willingness to advance another shilling, which the men refused, and therefore, adhering to their original resolution, gave a fortnight's notice to leave.

Alloa.—On Monday, in accordance with a previous notice, the Alloa journeymen joiners came out on strike, their demand for an additional ½d. per hour having been refused by their employers. Their wages are at present 5¾d. per hour. A good many buildings at present in course of erection must be finished by Whit Sunday, so that the men look forward to a successful issue of the strike.

TENDERS.

Bethnal-green.—For waterclosets and enclosure wall at the Bethnal-green Workhouse, for the Guardians of Bethnal-green. Quantities supplied. Mr. W. Mundy, architect:—

	£	s.	d.
Rivett	282	0	0
Hill, Keddell, and Waldram	275	0	0
Garrud	266	17	0
Blackmore and Morley	263	0	0
Ennor	249	0	0
Kipps	249	0	0
King and Sons	248	0	0
Brown and Sons	240	0	0
Croaker (accepted)	240	0	0
Eaton and Chapman	240	0	0
Capps and Ritso	239	7	0
Blease	239	0	0
Stevenson	232	0	0

Bethnal-green.—For receiving wards at the Bethnal-green Workhouse for the Guardians of St. Matthew, Bethnal-green. Quantities supplied. Mr. Wm. Mundy, architect:—

Wicks, Baugs, and Co.	£2120
Blackmore and Morley	1955
Hill, Keddell, and Waldram	1932
Ennor	1862
Crabb and Vaughan	1830
Croaker	1775
Brown and Sons	1733
Rose (accepted)	1717

Harleston.—For rebuilding the Chapel-of-Ease at Harleston, Norfolk. Mr. R. M. Phipson, F.S.A., architect:—

Grimwood (accepted)	£3150

Highbury.—For London General Omnibus Company's coach factory:—

Collins	£7150
Goodman	7092
Maton	6841
Blackmore and Co.	6830
Marshall	6770
Ford	6769
Mann	6745
Blease	6743
Kipps	6518
Till	6484
Stephenson	6390
Beeton	6200
Crabbe and Vaughan	6190
Aitchison and Co.	6145
Crockett	6120
Eaton and Chapman	6025
Lacy	5740

Architect's Estimate, £6978

Islington.—The following tenders for masons' and paviours' work for one year have been accepted by the Islington Vestry:—Aspinall, for mason's and paviours' work; Dodd, for ballast, gravel, core, and flints; and Manuel, for granite.

London.—For reinstatement of premises after fire, 83A, Whitechapel-road, for Mr. B. Willomat. Mr. S. W. Iron, architect:—

	£	s.	d.
Warskett	687	0	0
Crow	676	0	0
Johnson	657	14	8
Moyle	652	12	2
Wieks, Bangs, and Co.	652	0	0
F. and F. J. Wood	633	0	0
Rivett	592	0	0
Thorpe	585	12	0
Hearle	582	0	0
Palmer	575	0	0
Brown and Son	535	0	0
Ennor (accepted)	534	0	0

Manchester.—For excavation and brickwork for sub-basement and basement, Barton's-buildings, Deansgate. Corbett, Raby, and Swyer, architects, 78, Cross-street, Manchester. Quantities supplied:—

Rutherford	£5010
Parker and Son	4900
Clay and Son	4732
Higgins and Son	4680
Healey (accepted)	4663

Old Kent-road.—For repairs to the vacant houses, &c., previous to the election of nine inmates in April next, to the Licensed Victuallers' Asylum, Old Kent-road. Mr. W. F. Potter, architect:—

	£	s.	d.
Geddes	98	0	0
C. Parkes	55	15	0
F. Hersee	55	3	6
S. Hayworth	55	0	0
Day (accepted)	54	15	0

St. Neots, Hunts.—For New Farm House, in Wintringham, for Mr. T. Day. Mr. John Usher, architect:—

	£	*s.*	*d.*
Henry Field	2460	3	0
B. Nightingale	2427	0	0
L. B. Moore	2366	0	0
E. Twelvetrees	2260	0	0
S. and W. Pattison	2200	0	0
W. Hutchinson	2189	0	0
S. Foster	2166	0	0
Henry Young	2149	0	0
Broun & Withey	2028	13	5
Chas. Lord	1990	0	0
Hobson & Taylor	1987	0	0
Edey & Whildman	1771	0	0

Stradbroke.—For restoring Stradbroke Church, Suffolk. Mr. R. M. Phipson, F.S.A., architect.

Nave and Aisles:—

Grimwood (accepted)	£2052

Chancel:—

Grimwood (accepted)	£451

St. Pancras.—For the erection of relief offices, Camden-town, for the Guardians of the poor of the parish of St. Pancras. Messrs. Richardson and Waghorn, surveyors:—

Kelly Brothers	£1843
Hyde	1777
Manley and Rogers	1777
Mann	1777
Scrivener and White	1774
Crockett	1750
Till	1749
Rose	1733
Cullum	1733
Crabb and Vaughan	1728
Eaton and Chapman	1695
Aitchison and Walker	1597
Ball	1557
Heushaw	1517

Wandsworth.—For enlargement of Catholic schools Mr. H. J. Hansom, architect:—

Nightingale	£355
Adamson and Son (too late)	315
Gregory	314
Gooding	290
Easton Brothers	284
Hearn	275
Bass	240
Atkinson (accepted)	217

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Leeds, April 3.—Building new bridge. Quantities supplied. Bridge Office, 19, Corn Exchange, Leeds.

Isle of Ely, July 25.—For an iron bridge across the river Ouse, at Littleport. F. M. Metcalfe, clerk of the peace, Wisbeach.

Oldham, April 5.—For the erection of new business offices, entrance lodge, &c., for the Gas and Waterworks Department. Thomas Mitchell, architect, Oldham.

London.—Metropolis Management Acts (Plumstead Parish).—April 5.—For laying down and constructing 2,700ft. run of 3ft. by 2ft. brick sewer, from Crescent-road, through Sandy-hill and Brookhill-park, to Foxhill. J. Murray Dale, Clerk to the said Board, Plumsted District Board Offices, Old Charlton, S.E.

Abingdon, April 8.—For the restoration and repairing of S. Helen's Church. The Ven. Archdeacon Pott, Abingdon Vicarage.

Staffs., April 13.—For the erection of a small house, farm buildings, and bridge at Stanley, near Endon, for Mr. Isaac Robinson. Mr. Ralph Dain, architect, Shakespeare-buildings, Hanley.

Bedford, March 28.—For the erection of a farmhouse containing twelve rooms, with cellars and dairy, at Clap, near Bedford. James Horsford, architect, No. 7, Well-street, Bedford.

Gorleston and South Town, April 3.—For the construction of about 3,300ft. run of from 2ft. to 3½ft. brick-sewer, and about 7,700ft. run of pipe-sewer. Samuel B. Cory, Clerk to the Board.

Rochdale, April 7.—For furnishing the new town-hall, Rochdale. Mr. W. H. Crossland, the architect, 2, Carlton-chambers, 4, Regent-street, S.W.

Barrow-in-Furness, April 6.—For the erection of chapel and other buildings for the proposed new cemetery. C. F. Preston, town clerk, Municipal Offices, Barrow-in-Furness.

Bournemouth Commissioners, March 27.—For extending their present sewer outfall by means of iron pipes. James Druitt, clerk to the commissioners.

Stockport District Waterworks, March 28.—For the construction of a reservoir at Lyme-park, together with all masonry and other works appertaining thereto. George Mather, secretary, Waterworks Office, Stockport.

Midland Railway, April 3.—For the erection of an engine shed and other buildings at Wellingborough. James Williams, secretary, Derby.

Trinity-House, Hull, April 5.—For the erection of certain new buildings, and for alterations at the farm at Preston (Somerden), in Holderness. Edward S. Wilson, secretary.

Welwyn, Herts, March 28.—For the construction of about 1,500 yards of stoneware pipe-sewer, together with the necessary flushing and ventilating shafts. W. H. Kite, clerk to the sewer authority, Welwyn Union, Welwyn.

Stockport District Waterworks, March 28.—For the construction of a covered conduit, about 1,400 yards in length, situate in Lyme-park, about 1½ miles from Disley. Geo. Mather, secretary, Waterworks Office, Stockport.

Bramley, May 29.—For the erection of an iron foundry, fitting-shop, boiler-house, chimney, &c., at Swinnow, near Bramley. Job Isles, New-street, Barnsley, near Leeds.

Beaumaris, March 28.—For the re-construction of the pile pier on the Menai Straits, in the borough of Beaumaris. Richard Williams, Town Clerk's Office, Beaumaris.

Basingstoke Waterworks, April 29.—For supplying and delivering of about 190 tons of several size pipes. Messrs. Russ and Minns, 9, Victoria-chambers, Westminster, S.W.

BATH AND OTHER BUILDING STONES OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,

Quarrymen and Stone Merchants.

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Bath Stone Office,

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TO ARCHITECTS.

GREEN ROOFING-SLATES.

As supplied to H.R.H. The Prince of Wales at Sandringham.

The Penmoyle Sea-green Slates are specially adapted for Churches, Public Buildings, &c., &c.

(*Less costly than ordinary Gothic Tiling.*)

These durable and non-absorbent Slates can be obtained in sizes suitable for Gothic Architecture, at prices as under.

In Railway Trucks, Docks, Gloucester:—

		Per 1,200 Slates.	Equivalent to per square
Best Green Slates	14 by 7	2 17 6	16s. 6d.
Do. do.	13 by 8	2 17 6	16s. 6d.
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Do. do.	12 by 6	1 7 6	11s.

Prices of large Sizes, Cost of Transit, Reference Testimonials and Sample Specimens, may be obtained on application to

MESSRS. RANDELL & CO., Corsham, Wilts.

Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street, Westminster.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The "Civil Service Gazette" remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast table with a delicately-flavoured beverage, which may save us many heavy doctors' bills." Each packet is labelled—James Epps and Co., Homœopathic Chemists, London.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD:

Pig—Foreign	per ton	£17	15	0	£00	00	0
„ English W.B.	do	19	10	0	19	15	6
„ Lead Co.	do	18	15	0	18	7	0
„ Other brands	do	18	5	0	18	10	0
Sheet Milled	do	18	10	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or minium	do	19	15	0	23	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry.	do	27	0	0	0	0	0
„ ground in oil	do	0	0	0	0	0	0

COPPER.

British—Cake & Ingot	per ton	72	0	0	72	10	0
Best Selected	do	74	0	0	0	0	0
Sheet	do	75	10	0	77	0	0
Bottoms	do	79	10	0	81	0	0
Australian	do	72	0	0	75	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	65	0	0	66	0	0
„ Refined ingot	do	71	0	0	73	0	0
Yellow Metal	per lb.	0	0	6½	0	0	7¼

IRON.

Pig in Scotland, cash	per ton	2	14	0	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
„ Wales	do	6	7	6	6	12	6
Staffordshire	do	6	15	0	7	0	0
Rail, in Wales	do	6	15	0	7	0	0
Sheets, single in London	do	9	5	0	10	0	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	15	0	10	0	0

TIMBER.

Teak	load	12	10	0	13	0	0
Quebec, red pine	„	3	15	0	4	15	0
„ yellow pine	„	4	5	0	5	5	0
St. John N.B. yellow	„	0	0	0	0	0	0
Quebec oak, white	„	6	0	0	6	5	0
„ birch	„	3	15	0	5	0	0
„ elm	„	4	0	0	4	10	0
Dantzic oak	„	5	5	0	6	10	0
„ fir	„	2	10	0	4	10	0
Memel fir	„	3	0	0	4	0	0
Riga	„	3	5	0	3	10	0
Swedish	„	2	5	0	2	15	0
Masts, Quebec red pine	„	4	0	0	6	5	0
„ yellow pine	„	4	0	0	6	5	0
Lathwood, Dantzic, fm.	„	3	0	0	5	0	0
„ St. Petersburg	„	5	0	0	6	10	0
Deals, per C., 12ft. by 3 by 9in.,							
Quebec, white spruce	„	12	0	0	17	6	0
St. John, white spruce	„	12	10	0	14	0	0
Yellow pine, pr reduced C							
Canada, 1st quality	„	18	0	0	19	10	0
„ 2nd do	„	12	15	0	13	10	0
Archangel, yellow	„	11	10	0	14	10	0
St. Petersburg, yellow	„	13	0	0	13	10	0
Finland	„	7	0	0	8	0	0
Memel	„	0	0	0	0	0	0
Gothenburg, yellow	„	8	10	0	10	10	0
„ white	„	8	10	0	9	10	0
Gefle, yellow	„	10	10	0	12	10	0
Soderham	„	8	10	0	12	0	0
Christiania, per C., 12ft. by 3 by 9in., yellow	„	10	0	0	12	10	0
Flooring boards, pr square of 1in., first yellow	„	0	7	6	0	10	6
First white	„	0	7	0	0	9	6
Second qualities	„	0	6	0	0	7	0

OILS, &c.

Seal, pale	per ton	37	10	0	38	0	0
Sperm body	„	84	0	0	0	0	0
Cod	„	35	10	0	0	0	0
Whale, South Sea, pale	„	36	0	0	37	0	0
Olive, Gallipoli	„	49	0	0	0	0	0
Cocoanut, Cochin, tun	„	48	0	0	48	10	0
Palm, fine	„	38	0	0	38	10	0
Linseed	„	33	0	0	0	0	0
Rapeseed, Eng. pale	„	46	10	0	47	0	0
Cottonseed	„	28	0	0	34	0	0

BANKRUPTS.

TO SURRENDER IN THE COUNTRY.

Henry Cowley, Oxford, builder, April 4, at Oxford.—George Culshaw, Southport, builder, March 30, Liverpool.—James Garner, Liverpool, painter, March 30, at Liverpool.—Lot Richardson, jun., Shillington, builder, March 29, at Bedford.—Emmanuel Richards, Bristol, builder, April 4, at Bristol.

PUBLIC EXAMINATIONS.

April 14, C. Holman, Kingston-upon-Thames, builder.—April 11, W. Topham, Harrogate, builder.—May 9, A. R. Chapman, Norwich, builder.—April 19, C. Taylor, John-street, Upper Holloway, contractor.—April 14, J. Sturgem, Bolton, engineer.—April 6, J. Stow, Nelson, Lancashire, plumber.—April 19, D. Cunningham, Leicester, plasterer.

DIVIDEND MEETING.

March 30, N. Booth, Batley, builder.

DECLARATIONS OF DIVIDENDS.

F. Tyrrell, Reading, contractor, div. 1s. 7d.—J. Aspinall, Birmingham, painter, div. 7d.

PARTNERSHIPS DISSOLVED.

Briggs, Ingham, and Carey, Halifax, builders.—Peters and King, Acre Mill, near Bacup, stone merchants.—Daniels and Church, Gillingham, brickmakers.—Sunderland and Briggs, Oxenhope, Yorkshire, stone merchants.—Hutchinson and Swift, Elland, Yorkshire, plasterers and painters.—P. and H. Bannister, Stretford, and elsewhere, timber merchants.—Whitehouse, Thomas, and Jones, Bodfari, Flintshire, ironfounders.—Majors and Storr, Newhaven, engineers.—Hirst and Son, Ending, near Rochdale, joiners.—Ramsbottom and Co., Newton Heath, iron founders.—Sibson and Williamson, Leicester, timber merchants.

THE BUILDING NEWS.

LONDON, FRIDAY, MARCH 31, 1871.

THE INTERNATIONAL EXHIBITION OF 1871.

WE look with great interest to the influence upon art which will probably be exercised by the exhibitions to be inaugurated this year. Hitherto, no art has been recognised or popularly appreciated but that of painting, and, to a very restricted degree, sculpture. The Commissioners have done well to break down this arbitrary distinction, and have set the wise example of recognising the claims of fine art wherever exhibited. Even the once divine work of the needle is not to be despised. We have long felt the injustice under which all artists but painters worked, and hoped that something might be done for art applied to architecture by the Royal Academy when they got into their new house, but the same drawbacks prevail in the new gallery as existed in the old. Artists may show drawings of their works, but cannot show the works themselves, and so are put at a complete disadvantage in competing for public favour and appreciation with the painters and sculptors. Their drawings, so far as the unprofessional public are concerned, might almost as well be away, for being imperfectly understood they are not properly esteemed or valued. Under the most favourable circumstances, such drawings scarcely appeal at all to any but those perfectly conversant with the technicalities of such drawings. But, however well one may be instructed in such matters, still it is a very different thing to judge of an artist's ability by what he can put upon paper and what he can really carry out in practice. A very fair drawing might be made by a person but little practised in the arts of which it treated, if he possessed an observant eye, a retentive memory, and some original power. What would be the result of such a clever sketch, experience only could show; and it would require some boldness on the part even of the professional patron to order its execution without positive proof that it could and would be properly carried out. In the case of architectural works of course the nature of things precludes the possibility of anything but working drawings being exhibited, but then in this case nothing more is required. Few are so foolish as to enter into great works without having proper advice, unless they possess adequate knowledge themselves; but in art works, applied to architecture and the elegance and convenience of life, one wants to see the works themselves, and there is not the slightest reason why we should not. In painting itself many artists have been beautiful draughtsmen, who yet have invariably spoilt their original designs in finishing them. They could draw to any amount, but when, as in the middle ages, it came to putting on the body colours, as in later times, when the drawing was transferred to canvas, and the attempt was made to execute it in solid oil paint, the result was always more or less a failure. Many might be named in whose case this was true. How far finer are the beautiful washed-in outlines of the Queen Mary Book (2 B. 7) than any finished body-colour pictures of the time! Who ever saw a pointing by Van Uden or Van Goyen nearly equal to their numerous sketches? If, then, this is true of painting, which is so closely and intimately connected in process and handling with merely limning or drawing that so much difference may, and usually does, exist between the one and the other, it is useless to expect that the public will take the trouble to guess at what such-and-such a drawing of applied art might turn out if executed by or under the superintendence of such-and-such persons. They would not do it now in the case of a painting, much less would they dream of such a thing in a piece of furniture or ornamental utensil. We wished rather than hoped that, when plenty of room was at last given them, the Royal Academy would have made a point of exhibiting such architectural, ecclesiastical, and domestic articles of furniture and luxury as could as easily be exhibited as the at present all-engrossing paintings and sculptures. The Royal Academicians are masters of the position, and, no doubt, mean to keep it if they can; whether wisely or no is another matter. It is very doubtful whether less good paintings would be sold because the connoisseurs also bought other equally beautiful and meritorious decorative works. It is quite possible that the sale of the one might help that of the other. But then the production of the one description of works, for some reason or another, is not supposed to be so honourable as of paintings in these days. We say in these days, for it was not always so, and we trust will not always be so. It is quite possible that the art-power and skill in producing a first-class work in furniture or metal work may be tenfold that required to produce a popular and meritorious painting, and if really shown there is no reason on earth why they should not be proportionately honoured and recompensed. At present, the painter only has been sufficiently valued—now probably much over-valued in numberless cases—because other artists have been made to get a hearing with the public. They had no chance of exhibiting their work, so as to bring them properly before the people. We trust that the opportunity now offered by the Royal Commissioners of the Exhibition of 1871 will not be lost. As the Royal Academy did not reach its present flourishing and prosperous state in a year or two, so we must not expect too much, either in the class of works displayed or in their general appreciation immediately. The thing must take time, but it can no longer be said that art is cramped for want of a favourable opportunity being offered of showing really good works when produced or getting a market for them. Both of these are now offered. The Exhibitions at South Kensington will be quite as prominent as those at Burlington House, and, as at that place, the artists will be allowed to state the prices at which they will sell their performances; and, as is the case with painting, they may be quite certain that ere long judges of art, whether purchasing for themselves, or as matters of trade to sell again, will not grudge very high remuneration for very high quality of design and workmanship. In former times it has not been worth the architects' while to spend as much or more time, thought, and talent over the drawing and execution of a chalice or work of furniture as would have sufficed to prepare working drawings for some considerable building; it has not been worth their while simply because, as things have been, that very limited number of persons who have principally been their employers, and even the societies who have set them in motion, have for the most part been so little instructed in art, and have had so little real feeling for it, that they have never required or appreciated anything but the most commonplace copies of the easiest works of antiquity. Correctness, so called, has been the order of the day, and hence the utterly uninteresting character, in every point of view, of almost all metal and wood work which has been done for ecclesiastical purposes ever since the revival. Hence the rejection of all but the merest mechanical processes, especially in metal work, mostly performed (from careless drawings, unintelligently copied) by the senseless stamp of the steam-engine. Most of these people, well-meaning enough in their way, have simply not understood that a vase of design and workmanship equal to what Cellini might have done was worth more than a commonplace copy of second-rate ancient art; and, unfortunately for the revival, this has been chiefly the calibre of the revivalists. Correct ritual—often only extreme ritual—has been the aim: correct or admirable art not so much as thought of. It is not saying too much to affirm that a broader view of the artist's duties has ever been a detriment to those who held such than otherwise. A lively fancy, an appreciation of humour, so universal in ancient work, a knowledge of and love for natural forms, especially the most perfect, have been supposed to be almost irreligious or profane. All this is now over. Artists have no longer to appeal to a section only of society. If they have the powers, there is no question that they will soon be recompensed with honour and emolument. But if this is to be so the works must really be of high quality, and, above all, they must be original. The man that cannot put his stamp upon his work, whether painter, sculptor, or other artist, will never command great esteem for his works. We question, too, whether in such works, to be successful, it will not be necessary that they should be not only original, but carried out by the designers themselves; for though very fine works may be carried out by very superior workmen from the designs of others, when thoroughly overlooked by the originator of the design, still it is almost necessary for the production of the highest works that the handiwork be done by the artist himself. This must certainly be so as far as the finishing is concerned, as in sculpture, or even painting, some of the rougher and more mechanical parts may be entrusted to clever pupils or workmen, but the work will not reach the desired excellence, however well it may be overlooked, without the hand of the master himself. It may be very like the right thing, enough so to be undistinguishable to the multitude, but not to satisfy the practised eye upon whose judgment the market value at least of such things depends. We must not forget that, to a great extent, the taste has to be created. For some years to come it will be uphill work. It will take time to break up the present fashion for Mediæval-pattern rubbish, and the worse Renaissance stuff in base metals basely cast. But if, year after year, original work immensely superior in every way to these fashionable abominations be shown at the South Kensington Exhibitions, there will be no lack of support and encouragement, increasing year by year, as has been the case at the Royal Academy. At the same time, we must not be too sanguine about rapid success. It takes a long time often before a really great painter is rated at his true value, and we cannot expect the case of those who labour in art-work, of a kind that does not so entirely commend itself at once to the eye, will be different. There will certainly be disappointment at first, as likely as not to the public as well as the artist. Applied art has hitherto been so ignored that much of the talent that should have naturally been employed in that direction has been deviated to less congenial, but more profitable pursuits. This also will take time to remedy. But, notwithstanding the many drawbacks and difficulties which surround the subject, we are sure that if the present opportunity is fully comprehended by those who have the progress of art at heart, and those who feel their powers to force the public to recognise that power, and, admiring it, to honour it, and if it is energetically acted upon, the inauguration of the Exhibitions at South Kensington will do more towards the advance of fine art than anything since the institution of the Royal Academy a century ago, in the year 1768.

SCANDINAVIAN MONUMENTS.*

THIS work, a copy of which has recently been purchased by the Institute of Architects, on the recommendation of Mr. Seddon, deserves to be better known than it is. We regret to say the valuable architectural library in Conduit-street is not studied as it should be; we propose, therefore, to give a description of this recent acquisition, in the hope of inducing some of our readers to go and examine it themselves. The work is dedicated to the ex-Emperor of France, Napoleon III., to whom certainly is due the merit of having assisted towards the production of many similar undertakings, which otherwise could not have been completed. In this case the service rendered to the arts is enhanced by the fact that the author was not even a native of France, but a Swede, and therefore could have had but small claim to his help. M. Maudelgren in his preface says that, having noticed the indifference with which the history of Swedish art had been treated, he set himself the task of copying its remains, and having formed a sufficient collection of drawings, he first tried, but failed, to get them published in London. That he should have been more successful in Paris even Englishmen, however, will rejoice, while they regret it should have been necessary for him to have recourse to others than themselves.

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* "Monuments Scandinaves du Moyen Age avec les Peintures et Autres Ornaments qui les Decorent, Dessines et Publies." 'Par N. M. MAUDELGREN, Paris, 1862.

It is singular that, while the vivid lines with which undoubtedly most of the churches of our own country and of Christendom generally were once richly dight have faded away, a considerable number of small parish churches in Sweden should retain in such perfection and abundance their original and elaborate distemper decorations. It is true that Sweden is not the only country to which this statement is applicable, for Didron found 935 churches, chapels, and oratories, in his visit to Mount Athos, all filled with pictures, and that the modern Greeks there still continued this style, which appears to be neither slow nor difficult. He relates that he had an opportunity of watching a monk with five assistants, painting a Christ and eleven Apostles the size of life within the space of an hour, without either cartoons or tracings. One pupil spread mortar on the wall, the master drew the outline, another assistant laid on the colours and completed the forms, a younger pupil gilded the glories, painted the ornaments, and wrote the inscriptions which the master dictated from memory, and lastly two boys were occupied in grinding and mixing the colour. Whether or not such astounding celerity of execution be attainable amongst ourselves, or desirable even if attainable, it is evident that painted interiors need not be so tedious or so costly to produce as is the case with us at present. No church, then (as the writer of an excellent article in the *Ecclesiologist* on the Mural Paintings at All Saints', Wakefield, from whom we are quoting, observes) need excuse itself by poverty from supplying such pictorial instruction and refinement to its worshippers.

The churches principally illustrated by M. Maudelgren are those of Bjeresjo, Kumbla, Floda, Tegelsmora, Solua, Torpa, Ameneharads-Rada, and Risinge. In most of these, although the style of art is stiff and mannered, there is a wealth of design both in the paintings and ornamental details, and a harmony of general effect well deserving the most attentive study of architects and decorators. We propose to try and cull, for the benefit of our readers, some of the numerous lessons that may be learnt from these works, which, though possibly rude in comparison with what may have been the best examples of Mediæval polychromatic decoration, evidently present to us fairly the general character of the conventional treatment then in vogue. The church of Bjeresjo consists of a small nave of two square vaulted bays, without aisles, a chancel of but one square, barrel-vaulted, and a semi-circular apse, with an oblong western tower as a narthex, placed with its widest side next the nave. With the exception of this western feature, which is one quite peculiar to the northern countries on the Continent, the plan is not dissimilar to many of our own small Norman churches, such, for instance, as that at Kilpeck. The soffit of the chancel arch, the chancel and its apse, are the portions that are painted. The age of the paintings appears to be the thirteenth, and that of the structure itself the twelfth century. The soffit of the chancel aisle bears two grand allegorical figures of virtues triumphing over the vices. These are given one-eighth full size in Plate 3. The figures are extremely long, and dressed in the same close-fitting robes to which we are accustomed in the statues of the portals of French cathedrals of the twelfth century. The robes are white, shaded only green and gray, but the mantle is reddish ochre on the outside, lined with white. The background is a subdued light blue, as a panel within a broad border of quiet green, surrounded by thin lines of white, brown, and dull purple. This character of background is that generally adopted throughout the decorations, and has a peculiar, but soft and harmonious effect.

In the chancel, the walls of which are low, the treatment is as follows:—Lines are drawn at dado height under the sill of the windows, and at the springing of the vaulting, just above the arches of the windows; in the apse these are developed into rich ornamental facets as string courses. Between these lines figures, nearly life-size, occupy the wall space between the window openings. Those on the south side of the choir are from subjects of the Old, and on the north of the New Testament, and round the apse there are the Twelve Apostles.

The barrel vault is enriched with five tiers of paintings; the central one carried under the ridge is the genealogical tree of Jesse, a most beautiful composition of quatrefoils in succession, with a figure seated in each against a similar blue and green background to that before described. The stem bearing these branches, right and left, encloses the bust of smaller figures, and the whole, with the foliage of the tree, is thrown up by a dark purplish ground. The lower tiers on each side are divided from this and from each other by red and brown lines, and have their figures ranged upon long panels of blue, with green borders, as before. The semi-dome of the apse has the figure of Our Lord within *vesica piscis* in the centre, surrounded by the emblems of the four Evangelists and the Virgin on one side, and S. John on the other. All have simply fluted gilt nimbi. As to the execution of these paintings, M. Maudelgren's account agrees apparently somewhat with that previously given of the modern Greek practice. He says that when the mortar had been spread on the wall and vault, it was carefully polished with a smooth iron while half-dry. The surface being thus made very even, a warm light general colour was put over the whole. The design was then traced in a darker tint, apparently while the wall was still damp. The nimbi, the crowns, the ornaments on the dress, the fruit on the trees, are made in relief, and the rest of the paintings were painted in distemper.

The next church illustrated, and that most profusely, is that of Ameneharads-Rada, in Wernseland. This is quite a different character from that at Bjeresjo. It is entirely constructed of wood, and consists simply of an oblong nave and square chancel, the roofs and ceilings of which internally take a trefoiled form, and as well as the walls above the height of about two feet, are entirely covered with a series of most interesting paintings. About four feet from the ground a rich and well-designed band of ornament runs round the church, and an imitation curtain in plain brown colour, about two feet deep is, as it were, hung from it, and gives a quiet base for the decoration above. A similar band marks the springing line of the ceiling; the height of the walls of the nave between them is divided in the nave by another band, into two equal tiers of painting; the wall of the chancel being much lower is not so divided, but is occupied with a single tier. The ceiling of the nave is covered by a continuous diaper of circles enclosing subjects, and the spandrels filled with rich conventional foliaged ornament. There are two rows of these circles in each of the lower curves of the trefoil-shaped ceiling, and five in the upper, one forming the ridge. Thus there are nine rows in all, forming this bold diaper, and covering the whole ceiling.

The ceiling of the chancel is differently treated, the lower curve having a range of standing figures upon a slate covered background under canopies in a light tint, their pediments relieved against vermilion. The upper semicircular curve has a range of seated figures on each side on alternately red and slate-coloured backgrounds, under a light coloured arcade of semi-circular arches, with richly ornamented spandrels, and a row of circles along the ridge.

In this church we have no longer the green and blue backgrounds, but instead generally plain slate-coloured ones, with, however, narrow green borders to them; the arches and canopies of division are light, white and buff, and the vermilion spandrels and rich bands of ornament produce a richer but less soft effect than that of Bjeresjo. Some of the string-course bands deserve notice, and may be described as running scrolls, drawn upon a ribbon-like ground of narrow strips of different colours placed diagonally. The legend of S. Hippolytus and sacred subjects represented in the paintings are full of interest; but for these we must refer our readers to the work itself, our purpose being only to give a general idea of the character of the general treatment.

The church of Edshut is another interesting variety of the same class as that last described. It is wholly of wood, but has four internal columns in the nave, and an octagonal apse projecting from the chancel. It is likewise wholly covered with paintings of rather a larger size and broader treatment.

In the church of Greuna, a semicircular apse of masonry still retains, in excellent preservation, the paintings of its domical vault in a much lighter style; an ornamental string course marks the springing of the vault, and five light arches on slender columns enclose subjects drawn in delicate tints upon a white ground. Above this arcade, upon a ground of salmon colour filling all the spandrels, are several concentric circles occupying the apex of the vault with the representation of the Creation. In this example numerous inscriptions in black letters on white labels are introduced with good effect.

The church of Risinge is a long parallelogram of six vaulted bays, the easternmost being octagonal-ended. The vaultings are beautifully painted, with the utmost tenderness and delicacy of effect. in subdued tints upon a warm general ground. The spandrels are filled with circles and other geometrical forms, enclosing a multitude of subjects from the histories of Samson, Susanna, Judith and Holofernes, Haman, and Ahasuerus, with a host of personages from the Old and New Testament. The quaint way in which the spandrels and odd spaces are filled up randomwise with strips of bands of ornament and various devices is almost Japanese in point of freedom.

Other exquisite specimens of decorative paintings on vaultings are given from the church of Kumbla, plate 27; of Floda, plate 29; of Tegelsmora, plate 35; Torfa, plate 37; and Solfa, plate 40. We have not, however, space for the description of any of these, and our object is rather to direct the study of our readers to the work of M. Maudelgren itself. One and all, however, of the plates are full of valuable hints as to the proper treatment of polychromatic design, and contain a mine of suggestive details for ornament as well as for the iconographic arrangement of sacred subjects for pictorial representation.

One point to which we desire to call especial attention is the simplicity of the treatment of the paintings. Some might perhaps consider this more appropriately called rudeness. Stiff and conventional certainly they are, and so far need not be selected as models. In these days the public will not be content without good drawing, and good drawing may be added with advantage, but the method of outlining and filling in with plain broad colour is what we desire to impress upon painters who would lend their aid to the decoration of architecture as the only proper treatment, and it has the further advantage of being the only one practicable in most instances on the score of cost. Until the cost of such work be brought within moderate limits, it is hopeless for us to expect to be able to produce more than an isolated example here and there, which rather retard than otherwise the more general application of this class of art.

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THE ROYAL ALBERT HALL.

THE monster brick and terra-cotta structure which for four years has been gradually growing into shape at Kensington was opened by the Queen on Wednesday. We have from time to time devoted space to record its progress, and to explain the purpose of its erection, and now simply give a general description of the building.

The heavy brickwork of the exterior has been to a certain extent relieved by the use of terra-cotta. A massive base of terra-cotta, 13ft. in height, supports a red brick storey pierced with numerous square-headed windows deeply recessed in terra-cotta. Then comes the principal floor, with its terra-cotta upholders, with round-headed windows between each. A narrow projecting balcony runs above this right round the building, breaking the long line of wall, and above the gallery is stretched an immense frieze of mosaic work. This frieze, as most of our readers are aware, is somewhat of a novelty. The cost of a frieze with figures in relief was altogether beyond the means at the disposal of Colonel Scott, and doing his best under the circumstances, he determined on the experiment of a flat frieze in mosaic. The colours employed are buff upon a chocolate ground, the outlines being black. The drawings of the artists were first enlarged by photography; the mosaic work was put together at the Kensington Museum by the lady students of the Art Schools; and the slabs thus produced were fixed in Portland cement to the wall. The total area of the hall frieze is 5,200 square feet, and it occupied a staff of ten operators during the greater part of two years; the cost of the designs was £782, and of their enlargement £200; while the material and manufacture cost £3,444. Mr. Poynter's composition over the Northern porch represents the nations displaying their choicest productions to Britannia. One of Mr. Pickersgill's contributions has for its subject "Music, Sculpture, and Painting;" another, "The Infancy of the Arts and Sciences;" a third, "Pottery and Glass-making." One of the subjects chosen by Mr. Armitage is, "Princes, Art Patrons, and Artists;" another (over the Eastern porch), "A Group of Philosophers, Sages, and Students." Mr. Yeames depicts workers in stone, workers in wood and brick, and Architecture. Mr. Marks has treated Agriculture, Horticulture, Surveying, Astronomy, and Navigation; Mr. Horsley, Engineering; and Mr. Armstead, Mechanics.

The Northern or principal entrance consists of an arched portico, projecting some twenty feet from the main building, carried up an additional storey, and comprising a small concert-room, having communication by a corridor with the principal hall. The front is an arch twenty-two feet wide, with smaller side arches. The Eastern and Western sides of the hall have porches similarly treated, except that there is no central arch, the wall being built up and relieved by three window openings filled with ornamental iron grilles. The Southern entrance connects the building with the conservatory of the Horticultural Society, into which two flights of steps lead down.

The means of egress and ingress have been well considered and provided for. Twenty-two staircases communicate with the outside, and for each level there is a different staircase. The arena, 102ft. long by 68ft. wide, is reached by six different staircases, and is covered with movable chairs for about 1,000 persons. The amphitheatre stalls hold 1,366; the boxes 1,100; the balcony (said to be the best place for hearing) holds 1,800 people; and the picture gallery, which will generally be used as a promenade, will contain 2,000 persons. It is approached by four staircases and two hydraulic lifts.

The interior of the building is a vast hall of an oval shape, the southern end of which is nearly filled by the organ and orchestra, fronting which is the auditorium, the amphitheatre or stalls rising upwards beyond in tiers towards the boxes. Above the boxes is the balcony, and above that the picture gallery, which is built over the staircases and corridors, which form an outer zone to the auditorium below. It runs right round the building, the body of the hall being seen through the thirty Italian arches with scagliola pillars. The boxes and balcony project from the wall into the ellipse, each tier projecting three feet beyond that above it.

The glass roof has been hidden by a calico velarium or awning, stencilled. This is unfortunately necessary to keep off an excessive glare of light, and to prevent reverberation. In acoustic qualities the hall is undoubtedly deficient, and it is useless to attempt to disguise the fact that the success of the future musical performances contemplated therein will mainly depend on their selection. Works of a grand and massive character—the choruses of Handel and the like—will probably be heard without difficulty, but compositions which depend for their effect on elaborate detail had better be left unattempted. Even on Wednesday, during the Prince of Wales's speech and the prayer by the Bishop of London, an echo, which seemed to come from the picture gallery, flung back the words into the body of the building in a very unpleasant manner.

The cost of the hall has been £200,000. In the main outlines of the structure the architect (Colonel Scott) has adhered to the plans of the late Captain Fowke, R.E., under whose direction the earlier drawings of the building were prepared, and who had, after a long series of experiments, determined upon a somewhat similar form as the one best suited to the objects for which the hall was intended. The designs of Captain Fowke have been utilized, however, only so far as regards the main features of the plan. We owe to him the system of staircases, corridors, and exits, the form of the roof, and the main proportions of the building; but to Colonel Scott is due the precise form of the hall, the architectural façade, the internal arrangements of the building generally, and the working out of the numerous structural problems which necessarily arose in executing so novel a design. The plan of the late Captain Fowke had semicircular ends, with flattened sides. The present hall is nearly a true ellipse; the balcony was first introduced by Colonel Scott, and he substituted the glass roof for the plaster ceiling originally contemplated. The porches and the frieze were added by the Colonel, and the elevation entirely remodelled.

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News-rooms in connection with the Derby Free Library were opened last week.

A number of labourers' cottages and other buildings are about to be erected on the estate of the Right Honourable Lord Ashburton, at All Cannings, in Wiltshire. The greater part of the walls, and other portions of the buildings, will be constructed of Portland cement concrete, made with slag. This material, which is the refuse of iron ore, has hitherto scarcely been of any use, but has been proved one of the best materials for concrete building.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE twenty-fourth lecture of this course was delivered by Dr. G. G. Zerffi, in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. In commencing he said that the immense dimensions of the Roman temples, public buildings, and baths had rendered it difficult for the artists to devote their powers to the requirements of beauty. They had had to fill up large spaces, and to decorate huge friezes with gigantic compositions, and although everything, as far as material was concerned, had been at their disposal, they had been ornamentists, who had to study an allotted space, and to decorate it with huge forms, endless varieties of tracery, mouldings, and groups. Architecture, sculpture, painting, and ornamentation had, with the Romans, not originated in a genuine desire for art, but had been received as foreign importations, and applied to practical or social purposes. Their architecture had been borrowed, so also had their sculpture. Up to the times of L. Scipio, the brother of Scipio the elder, wooden images had been carried about, but this general's victories in Asia had changed the manners, tastes, and customs of the people. He alone had brought 1,424lbs. of silver and 1,420lbs. of golden vessels of exquisite workmanship to Rome. Bacchanalian festivities had then been first introduced. Their origin might be traced to the Indians, but more directly to the Egyptian ceremonies in honour of Saïs. The bull and the serpent were the oldest emblems of this worship. The Greeks had placed vessels ornamented with scenes from the festivals of Bacchus on the tombs. The Hydria had been the emblem of conjugal bliss, and persons dying unmarried had one placed on their tombs. With the Greek divinities, these customs had been brought into Rome, and not only the artists who decorated the temples, but even the priests, had been Greeks. Wooden and terra-cotta images had been abandoned, and replaced by statues, sometimes of exquisite workmanship, in bronze or marble. The patrician custom of preserving wax casts of their ancestors had developed that strong predeliction for portraiture for which the Romans were so remarkable. Damophilos and Gorgasos, both Greeks, had been the first to improve upon the painting and sculpture of Etruscan artists. Narrow-minded historians, who were continually singing the praises of the Romans, seemed to forget that Rome entirely owed her art to Greece. Even during the later periods of the Republic (146 B.C.—14, A.D.), an Athenian school had been exclusively engaged in working for Rome. The artists of this period had been less original than eclectic, but they had certainly worked with great taste, and had endeavoured to overcome technical difficulties and attain perfection. In contemplating their productions, we felt that a current of cool reflection and æsthetic stiffness pervaded their works. The breath of divine inspiration was wanting. The forms of a Phidias, Skopas, or Praxiteles were there, but their spirit was gone. The lecturer next proceeded to a description of different examples of sculpture. He said there was a torso in the Belvedere at Rome, by Apollonius, in the style of Lysippus. The contours were soft, the muscles well filled up, and the composition faultless. It represented Hercules resting, and was an expression of activity in a state of sublime repose. Widely different from this work was the Farnesian Hercules, by Glykon, which was in the Museum at Naples. It was also after a statue by Lysippus, but the repose was full of agitation. Excitement streamed through the swollen veins, and activity was expressed in the powerfully raised muscles. A kind of mannerism was, however, perceptible, a contradiction in the conception, which was forcibly shown in the small head as compared with the exaggerated size of the body. The bombastic representation of the protruding muscles was also objectionable, making the work rather sensational than true to idealised Nature. Of Kleomenes, the son of Apollodorus of Athens, we had the celebrated Venus de Medici, now at Florence. There was, undoubtedly, a harmonious rhythm in the admirable outlines; but, as he (the lecturer) had pointed out in a former course, the whole conception was contrary to the laws of beauty. We possessed an excellent statue by another Kleomenes (probably the son of the former), which was now in the Louvre at Paris. It was undoubtedly the portrait of a great Roman orator. The outlines were refined, and full of life and motion; but, though the composition was free from all mannerism, it was inferior to the just-enumerated works, being less ideal. The Attic school had produced the two marble colosses of the horse-tamers, on Monte Cavallo, at Rome. According to the inscription, they were by Phidias and Praxiteles. This was not the case, but the work was undoubtedly a copy of the very best works of Greek art. The composition was as grand as expressive. The double movements of the prancing horses and the restraining youths were harmonious and admirable. A relief, by Archelaos of Priene was in the British Museum. It represented an apotheosis of Homer, and had probably been executed for Tiberius. In addition to an allegory, which was objectionable, we had here an attempt to turn the relief into a picture. The treatment was extremely cold and spiritless, and the work was without artistic value. Arkesilaos, whose birthplace was unknown, deserved to be mentioned. He had been an intimate friend of the celebrated Lucullus, and his models had been more highly valued than the statues of others. We had a Venus executed by him for Cæsar's temple of Venus Genetrix. The figure of the goddess was draped, but rather to heighten the effect of the limbs than to conceal them. Pasiteles, his contemporary, had been celebrated for his universality; he had been excellent in his technical treatment of marble, silver, bronze, clay, and chryselephantine works. Menelaos, a pupil of Stephanos, had left us a magnificent marble group which was in the Villa Ludovisi. It represented the meeting of a mother with her long-lost son. The Diana at the Louvre (of which there was a cast at the entrance to the male school, in the Museum); and the Apollo Belvedere at Rome also belonged to this period. The technical execution was perfect, but both figures were affected in their positions. Of much higher artistic value, and not less perfect in all its details, was the sleeping Ariadne of the Vatican. Passing to the next period, the lecturer said a change had taken place—the representations of divinities had become rarer, those of living beings more frequent. We drew nearer and nearer to that stage of Roman art in which ornamentation in statuary and relief had been calculated as an apotheosis of some mortal. Augustus, Germanicus, Drusus, Tiberius, Caligula, Claudius, and Caracalla had their portraits, which were full of life and vigour. To this period the innumerable statues of Antinous belonged. The production of busts, portraits, and reliefs had become by degrees the exclusive occupation of the sculptors. These productions might be divided into (1) the reliefs on public monuments and (2) the statues and busts of emperors. To the first belonged the reliefs of the triumphal arch of Titus, which commemorated the destruction of Jerusalem. This composition, as far as the liveliness of the grouping was concerned, was excellent. The execution was, however, hasty and coarse. These observations would apply equally to the relief of the Temple of Pallas and those of the Forum of Domitian. The statues and busts might be subdivided into (*a*) such as were correct representations of the originals, and (*b*) such as showed us the individuals in heroic or divine characters. We had now to consider the peculiarly Roman tendency for covering triumphal arches and columns with innumerable figures. Walls were filled with chronicles in marble commemorating the life, deeds, and triumphs of a Cæsar. We had the same verbosity in figures, the same bombast in metaphors and allegories, and the realistic minuteness of detail in these productions as in their Asian and African prototypes. The whole was, however, embellished by Greek taste; the forms were more correct; there was a variety in the grouping, and a naturalness in the composition which excited our admiration, though the fundamental principle of Greek sculpture, with regard to reliefs, had been sadly neglected in all these works. The back-ground was deepened so as to produce an effect of perspective, contrary to the laws of Greek artists, who assumed their figures to fill the same plane. The best specimen of this kind of sculpture was undoubtedly the column of Trajan. More than 2,500 separate figures, two feet in height, wound themselves in a spiral round the column, which had been erected A.D. 113, to commemorate the victories of the emperor whose name it bore. Including the statue, the height of the column was 130 ft. Of a less perfect execution than the column of Trajan was that of Marcus Aurelius. After Hadrian, sculpture and architecture had decayed and vanished. We had an equestrian statue of Marcus Aurelius which, though stiff, was not altogether without merit. In addition to this, there was the excellent portrait of the imperial monster Caracalla. Of this head, Burckhardt had said that Roman art stopped short with horror before it. The execution and the treatment of details had become less accurate; the chisel had lost its vigour; the artists had had no more thoughts. Portraits of ladies had been furnished with movable stone wigs, so that the busts might be altered to suit the changing fashions, and art had become more and more a trade. The spirit had become master of the form, and that form would have to regain its rights after long struggles. After a long and apparently hopeless night, a new day would dawn on art and ornamentation. The desperate collapse of the Ancient World had buried art beneath its ruins, but we should see her grasp at old forms again, endowing them with a new and entirely different spirit. The sublime idealisation of the Greeks would be lost for a thousand years, and a metaphysical symbolisation would spiritualise coarse forms and productions. Before this took place, however, the Romans had taken an interest in sarcophagi, in subterranean burial-places, and in catacombs. Death in this world and the hope of a better state in another had been expressed in reliefs by figures taken from Greek mythology. Dionysius, with his emblematical myths of an earthly existence full of misery, and the hope of a future bliss, had become the prominent figure on the stone resting-places of this period. The reliefs on the celebrated Pamphilian sarcophagus of the Capitol consisted of three groups. To the left we had Vulcanus, and close by his side Eros embracing Psyche. The principal scenes represented the birth and death of man. Prometheus has just finished his human form, which Athene endows with life, holding a butterfly over its head. The genius of death stands near. Psyche is shown sitting on the dead youth's breast, whilst Hermes receives his parting soul. The third group represented Prometheus bound to the rock, and Hercules killing the torturing vulture. To the left we had Adam and Eve under the tree of knowledge, and Elijah ascending into heaven in the chariot. Greek and Christian ideas were blended. We had before us the world of antiquity sinking. The butterfly of idealisation had fled. Ancient art sank with drooping head into the grave of the past; but as in the distant Northern regions on a long summer's day the shades of evening melted into the purple of the coming morning, the vital force of man's artistic power resumed after a short rest all its creative capacity.

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ARCHITECTURAL ASSOCIATION.

At the usual fortnightly meeting of this Association on Friday evening last, Mr. Rowland Plumbe, Vice President, occupied the chair. Mr. Jameson having been elected a member, Mr. J. S. Quilter, Secretary, announced that the surveying class would, it was hoped, shortly be commenced. The instruction will consist of twelve lessons, six indoors, and six outdoors, the instructor being Mr. Bennett, as was the case last year. It was also announced that the medals and prizes of the Institute for 1870-71 had been awarded, and that several of them had been gained by members of the Association, as follows:—The Soane Medallion to Mr. W. G. Davey, and an Honourable Mention in the same competition to Mr. Arthur Hill; the Institute Silver Medal to Mr. S. Wyman; the Students' Prize of Books to Mr. John Sulman; and the Medal for the Essay to Mr. Alfred Jowers—all members of the Association. It was also announced that Mr. Edmund Sharpe, F.R.I.B.A., of Lancaster, had in the press a description of last year's excursion to Lincolnshire by members of the Association. It was further announced that the applications by candidates for the Voluntary Examination this year were not so numerous as had been anticipated. Eleven candidates had applied for the Preliminary Examination, but only one for Proficiency, and he was just one day too late. In drawing attention to the Minutes of Proceedings of the last meeting of the Architectural Alliance, which will come up for discussion at the annual business meeting of the Association, Mr. Quilter read a letter which had been addressed by Mr. J. Douglass Mathews, the Hon. Secretary to the Alliance, to the different societies constituting that body. In that letter Mr. Mathews says:—

> In his opening address the President of the Royal Institute of British Architects suggested the desirability of the amalgamation of the Alliance and the other architectural societies with the Institute. As far as the connection of the delegates and members of the societies with the Institute is concerned, this would, no doubt, be most desirable, in order to make the Institute the recognised body of British architects; but as the Alliance is a representative body, and it can hardly be proposed to abolish the country societies, it has great advantages in ascertaining the views of the several societies comprised in it, and through them of architects generally, which could not so easily be obtained from individual members through the Institute alone. It also has opportunities of aiding the Institute (as, for example, in the establishment of local examinations) and of exerting an outside pressure that will be of value to that body. It is therefore hoped that the resolution inviting some members of the Council to be present at the next meeting of the Alliance will be accepted; and that the two societies may continue to work, each in its own sphere, but for the common good of the profession.
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> To make the Alliance answer its full purpose, it is most necessary that it should be in a position to obtain directly the experience of the whole, or the greater part, of the architects practising in the United Kingdom, but as many of these live at a distance from the provincial architectural societies, they are not represented. As, however, there are archæological societies in almost every county or diocese, and most of these include the principal local architects, I purpose ascertaining their names, and suggesting the formation of a Professional Architectural Committee or Section, for practising architects and students only, I should be thankful for any suggestions towards the accomplishment of this object. There can be no doubt that the Alliance has been found of value, and it must be borne in mind that your assistance is required in bringing to its notice those occasional subjects which arise affecting the profession, and also that the Alliance is still in its infancy, but the scheme having been fairly organised, it would be a great pity to allow it to drop for want of proper support from the allied societies.

On the motion of Mr. B. A. Paice, seconded by Mr. H. W. Lonsdale, the thanks of the Association were voted to Mr. W. Burges for his recent lecture to the members on some of the casts in the Architectural Museum.

Mr. H. L. Florence announced that it was intended to recommence the water-colour class this season, and

Mr. Quilter further announced that a class was in course of formation for the study of M. Viollet le Duc's "Dictionnaire Raisonne de l'Architecture Française."

Mr. Charles Baily, architect, then read a paper

ON ENGLISH IRONWORK IN THE MIDDLE AGES.

In his introductory remarks, Mr. Baily said that the most casual observer of the arts and manufactures of the Middle Ages would at once be struck with the great similarity of the style and design which exists in the several works. Whether the object was a piece of sculptured stone, an encaustic tile, a piece of painted glass, or a scroll of wrought iron, the same feeling and mind which produced the one produced the others, the only difference being that which was occasioned by the requirements of the material used. Passing on, Mr. Baily said that some of the oldest ironwork with which he was acquainted was on the south door of the nave of the Church of Staplehurst, in Kent. The door is covered externally with very curiously-wrought ironwork. It was of very early date—certainly not long after the Conquest—and symbolical in its design. The crosses and the dragon represent Good and Evil, whilst the circle and the continuous figure round the square signifies Eternity. The ship and the fishes relate to those of the apostles who were fishermen, and the zigzag forms on the edges of the hinges and braces—particularly on the lowest hinge—doubtless represent saws, the emblem of the Apostles SS. Simon and Jude. When this ironwork was in a complete state many other figures probably existed. The head of the serpent was very much introduced into the design of this door, as in a great deal of the ironwork of the Norman period. The wooden door on which this ironwork is mounted is formed of six planks of oak $1\frac{3}{4}$in. thick, rebated together, the rebates being from $1\frac{1}{4}$in. to $1\frac{1}{2}$in. wide, and fastened on to six horizontal ledges at the back; these are of oak, and half-round in section. The nails pass through the iron hinges and braces, and through the ledges, and the points are clenched, there being ornamental washers under the clenchings. Mr. Baily's first visit to this door was in 1846, when it was in the condition above stated; on visiting the church again in 1866 he found it had undergone that terrible ordeal miscalled "restoration," and that this old door had been taken down and repaired and patched, but not so much injury had been done as was often the case. Some parts had however disappeared, including the mast of the ship; in these cases of restoration it is the duty of those who undertake to superintend the work to take every care that nothing is lost. The interior of the doorway, which is semicircular, is the only part of the old Norman church which is now to be seen. The stonework of the doorway on the outside is clearly an insertion of a later period, and has a pointed head, but the iron band on the top of the wooden door is circular in form—a sufficient proof that it once hung in a round-headed opening.

Scattered over our country we still have much ironwork left of the Norman period. There is some of very early character on the north door of the nave of Willingale Spain, in Essex, and again at Little Hormead, in Hertfordshire; this latter in the design consists of semicircles intersecting the lozenge and the square, and on the upper part of the door the great dragon is to be seen. In later Norman times much of the Greek taste of the Lower Empire was introduced into Europe, and is to be found in some of the English ironwork. We see an example of this on the chancel door at S. Thomas's Church, Oxford, where rude imitations of the Greek honeysuckle form the terminations. At this period (the latter part of the twelfth century) the ironwork consisted more or less of scrolls in connection with straight lines, at first stiff and formal, as at S. Albans Abbey (in which example the snake's head still terminates the scroll), and at Abbot's Worthey, in Hampshire.

It was certainly in the early part of the thirteenth century that English architecture, fine and grand as it had been previously, began to burst into elegance, and it is perhaps at this time that we find the most beautiful works in iron. Beyond all doubt, the most elaborate, and at the same time by far the most extensive, church ironwork is on the western doors of Notre Dame at Paris. The same principle appears in this as in most of the English specimens. From large scrolls which spring from the ends of the straight hinge-straps, germinate other scrolls, more or less circular in form, which terminate in foliage and flowers. At Erith, in Kent, at the hall of Merton College at Oxford, at Leighton Buzzard, Bedfordshire, at S. Mary's Chapel, Norwich, at S. Mary's Church, Colchester, and at numerous other places, are works of this remarkable character. But one of the most beautiful pieces of ironwork now remaining is the guard of the tomb of Queen Eleanor (wife of Edward I.), in Westminster Abbey. The students of the arts and manufactures of the Middle Ages will do well to study this wonderful specimen, and draw every inch of it full size, outlining and shading it upon the spot, notwithstanding the time it would take. The pateræ of the closing rings on doors are in early instances mostly in the form of a cross, and generally of large size.

With the view of illustrating the catholicity of treatment to be observed in all the works of art of the Middle Ages, Mr. Baily exhibited a facsimile drawing of a rich piece of painted glass, from the nave of Salisbury Cathedral. The scrolls in this work resemble very closely those executed in the wrought-iron of the same period. Mr. Baily attached a symbolical meaning to the design, which he interpreted as follows: The design is formed on the figure of a cross, in the centre of which is a patera, which is coloured red to represent the body of the Saviour; round the cross is a circle—the crown of thorns—and consequently coloured green. From the patera, or the body of our Lord, proceed rays of light, being in blue and yellow, the extreme colours of the rainbow, and the rays, being four in number, may represent the Gospels, added to which the whole design is enclosed in that mystical figure the vesica piscis, which so often surrounds the figure of Christ.

Specimens of fourteenth century ironwork are somewhat rare, but there is a most interesting example on the south door of Eastwood Church, Essex, and this is, in one particular, unique. Sentences are cut in the hinges and straps in fourteenth century letters in old monkish Latin, in which a sweet Christian sentiment is introduced, "Peace to them who come in; peace to them who go out." There are also some fine scrolls on the south door of the nave of Bocking Church, Essex. Passing on to the fifteenth century, numerous works in wrought-iron are found in all parts of civilised Europe. The guilds of London, which had for a long time held a jurisdiction over the different trades, were mostly incorporated in the fifteenth century, and in the thirty-fourth year of the reign of King Henry VI. (1455) Lancaster King of Arms granted armorial bearings "unto the honourable crafte and felaship of the ffraunchised men of Iremongers of the Citie of London." In the twenty-second year of King Henry VIII. these arms were confirmed. The Company of Ironmongers were incorporated by Edward IV. in the third year of his reign (1463). In the fifteenth century the designers of ironwork introduced the fashion of laying one pierced plate of open work over another; sometimes three plates were so used, in order to give the effect of moulded tracery. This practice continued into the sixteenth century. Mr. Baily said that the grandest work of this kind he ever saw was the iron chapel of King Edward IV. on the north side of the chancel of S. George's Chapel, Windsor. It is quite as fine a work in iron as the chapel round the tomb of Henry VII. is in brass, and it is said that there is great reason to believe it to be the work of the celebrated Quentin Matsys. [Mr. Baily here exhibited two lock plates, illustrating this kind of work.] A very interesting example is to be seen at Norwich Cathedral, on a door of one of the chapels on the eastern side of the south transept. It shows the practice, then very prevalent, of introducing initial letters tied together with love strings into the design of the lock-plate.

Mr. Baily next proceeded to show various specimens and sketches of Mediæval ironwork. Referring to three hinges which were exhibited of the class called "garnetts," he suggested that the word garnett as applied to a hinge was derived from the garnishing of a door by the hinges of the middle ages. The last example to which he directed attention, although late in date, was very interesting, as being a diploma work such as every German apprentice was obliged to produce when out of his time before he could start in business. In conclusion, Mr. Baily said that we might congratulate ourselves upon living in a time when the beautiful works of our forefathers were understood and appreciated, and when we had artisans able to execute works in many cases equal to those of old. Having been brought up in the metal trades (although an architect by profession), he had a natural love of the subject. In his young days he made the designs from which the gates of the Royal Exchange and those at the shot factory in the Royal Arsenal at Woolwich were executed.

The paper was profusely illustrated with sketches and specimens, and was listened to with the greatest interest. On the motion of Mr. Gilbert R. Redgrave, seconded by Mr. Quilter, the usual vote of thanks was tendered to the lecturer, and the proceedings terminated.

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OLD CHURCHES OF SOUTH LANCASHIRE.

SOUTH LANCASHIRE, like most English counties, possesses certain peculiarities in its Mediæval architecture, caused both by its position and products, and by the character and growth of its population.

The churches contain little to demand study, whether looked at in an antiquarian or æsthetic point of view. They are seldom found older than the sixteenth century, and are generally very plain and simple. Their chief value, however, arises from their marked Gothic character, wherever they are, and of whatever date. This Gothic character is strongly developed in a very late Perpendicular style of architecture of thoroughly domestic character, and without any admixture of Pseudo-Classic detail or ornament, which admixture is frequently found in churches of the same date in other parts of England. The usual plan consists of a nave and side aisles, a chancel, and a large square tower at the west end. The towers are usually very massive and stumpy; they are seldom higher than 60ft., and crowned by a large and richly-moulded battlement, with or without pinnacles. They are generally one storey higher than the roof of the nave, and this storey contains usually a two or three light arched window. The west face of the tower contains a large entrance doorway, and large belfry window above, with a good deal of blank space between the top of the latter and the highest storey. The tower buttresses are sometimes very bold and massive, and sometimes just the reverse; they are always placed diagonally, and their set-offs are finished with plain slopes. The nave is generally long, wide, and comparatively very low, crowned either by a lofty parapet or by a large and deeply-moulded battlement, which in general character is like the tower battlement. The clerestory wall has no buttresses, but contains a great number of wide windows, often eight or ten in number, placed about two feet apart. These are always flat-headed, without tracery, and three or four lights wide; each of the lights having a pointed or round-arched head. The mullions do not stand flush with the face of the wall, but are set back in a splayed square-headed reveal. The roofs are very flat indeed, and nearly always covered with lead. The nave aisles frequently have a similar battlement to the nave, which battlement hides a flat lean-to roof at the back, as at Deane parish church, near Bolton; or, they have eaves gutters on the outer side of a loftier lean-to roof, or eaves gutters and a lofty gabled roof, which partially or entirely hides the clerestory wall. The latter is the exception; but was to be seen in Bolton old parish church (now destroyed). The aisle windows are mostly flat-headed, and like those of the clerestory, but loftier, and in some cases are arched. When the church has side galleries, the aisles are generally two storeys in height, the upper storey lighting the gallery. The upper and lower tiers of windows are frequently alike, but the lower windows are much loftier than the upper, the latter always being flat-headed. The total want of anything like symmetry in the size, width, position, and height from the floor line of any of the aisle windows is very remarkable; they are much fewer in number than those of the clerestory, though often of the same character, width, and number of lights; the distance between each of them is generally dissimilar by some feet, and that without any apparent cause. The lights and mullions are generally of the same width and character, but the number of lights often differs, and the sills of the lower windows usually vary in height from the floor by one or two feet. The stone seats for the mullions on all the window-sills are frequently left uncut. We seldom find a plinth, except to the buttresses and tower. The same general remarks apply when the aisles are only one storey high. The buttresses are about 1ft. 6in. wide, placed at irregular distances, but otherwise similar to each other. They seldom rise as high as the battlements, but have a good projection, which is divided into several stages, each stage being finished on the front face by a plain set-off. The four-centred arch is mostly found in use for all doorways and large chancel windows. The doorways are often richly moulded, and are placed where wanted, and there only, the appearance of the elevation and position of windows and buttresses being left to chance. A south porch is often found, and where there is a side gallery a separate external door is often provided for it, and sometimes even a porch. These gallery staircase doors are often raised on four or five steps, whilst the rest of the church is almost below the ground level, as at Deane; or if an external porch is used, it is frequently two storeys in height, the upper storey containing a large window to light the staircase, as formerly to be seen in Bolton parish church. The chancel is often a continuation of the nave, both externally and internally, the nave battlement or parapet being carried over it, and over the slope of the east-end gable. In this case there are generally large east, north, and south windows, the east being the largest and finest; each of these are arched, and divided into several lights, having a transom in the middle and Perpendicular tracery in the head. They are always of very late character, the upper lights always arched; and the lower, or those beneath the transom, sometimes are so. All cusping is entirely avoided. Sometimes the roof of the chancel is much lower than that of the nave, and without a parapet, as at Cheadle church, on the border of Lancashire, which chancel has three-light flat-headed windows on the north and south sides. Transepts are sometimes found, as at Radcliffe, where they are the height of the aisles; but they are seldom to be met with except as modern additions. The transept and chancel windows, when arched, are often filled with Flamboyant tracery. Buttresses placed diagonally are sometimes found at this end of the church.

Internally, we find the nave covered by a rich but almost flat roof. The fronts of the main beams are richly carved, and wall posts and struts are placed at the ends of each beam; these rest on wood or stone corbels, which corbels frequently take the shape of grotesque heads. The slightly inclined planes of the roof are divided by richly moulded beams and purlins into a number of large plastered squares, with massive carved bosses at each juncture of the beams and purlins. The wood work is always of oak, and has a rich and beautiful appearance. The aisle roofs are similar, but much plainer, and without bosses. The internal walls are plastered, and the windows have very little display. The nave arches are plain, generally chamfered, and often have a chamfered sub-arch. The pillars are of various plans, but for the most part octagonal, sometimes with and sometimes without a capital, but in the former case the capital is generally hidden from view by an unsightly gallery coeval with the building. The same remark would apply to the bases, which, being purposely obscured by high box pews, are little more than rough blocks of stone. The fonts are sometimes very plain, and sometimes very rich, but are seldom older than the churches. The doors, pews, and gallery fronts are very poor and unsightly, and their design and plan seem to have been entirely left to the tender mercies of the joiner. The churchwardens' pew, altar rails, pulpit, and reading-desk are the most richly decorated; the churchwardens' pew often has a wooden canopy over it, supported by twisted shafts. The organ is always placed in the west gallery. The joiner's work altogether is of no beauty, and very little interest, and being of a bad Pseudo-Classic character does not harmonize with the rest of the church. The glazing is executed in lead work, in small squares.

South Lancashire churches have a strong local character, and though possessing but little to interest the antiquarian or architect have a picturesque appearance, and—like the London churches built by Sir Christopher Wren in a different style of architecture—have a unique and distinctive character, leaving "footprints on the sands of time."

R. H. S.

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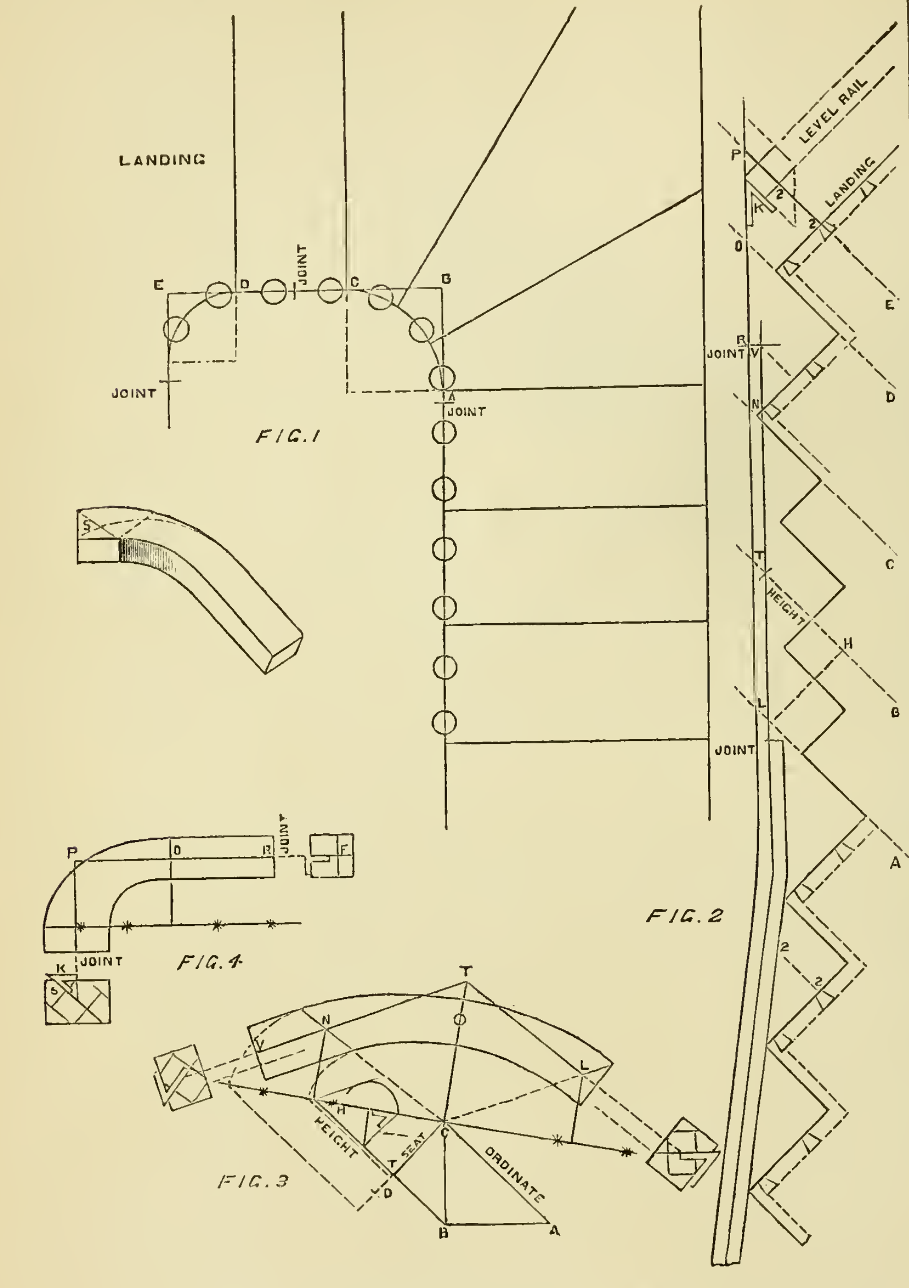
USES OF SAWDUST.—The sawdust of various woods is now turned to good purpose. That of boxwood is used for cleaning jewellery, whilst mahogany sawdust is employed for smoking fish. Birch and rosewood sawdust is used by furriers in cleansing furs. In Paris, common sawdust is very ingeniously utilised. A method has been discovered of forcing the material into solid moulds by the aid of heat and the hydraulic press. The sawdust thus pressed is said to present a brilliant surface which possesses great durability. Logwood chips, as is well known, are used by the manufacturers of fine fruity British port wine, 1lb. of logwood chips going to 26 gallons of cider, together with elderberry juice and other horrors.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXVII.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 227.)

Plate 27.—Description of Stairs having Three Winders in the Quarter Circle and Landing, with One Square Step.

FIGURE 1 shows a stairs, the plan of which is anything but good. The arrangement should be five, or even six winders, and no square step landing.

This would cause less space for the run, and throw the newel farther into the hall—a very important matter in some situations, especially so when the space is very limited. But the stairs are fixed, and no alteration can be made. The wreath is quite simple, and is easily constructed. Let tangents which enclose circles be unfolded on a board, as shown at

Fig. 2. The letters along margin correspond with those on plan.

Let winders here stand in the same position as those cutting the tangents on plan.

Have level rail stand above landing, to suit long baluster on square step. Letter E on the right indicates corner of small square on plan. Then, line E P is centre of rail. Set off half its width on each side of P. Now form square section, and show width and thickness of rail. This done, draw the pitch from corner of section to cut upper side of ramp at L. Next, set off half thickness of rail. Then find half the height of wreath between L and N by squaring over L H, which gives height H T. We are now ready for the mould.

Fig. 3. Let A, B, C equal corresponding letters on plan. Join A C, the ordinate. Make seat square with it.

Next, draw from B parallel with ordinate. Let T H, the height, equal that of H T on right. Join H C extended. This is both pitch and major axis. Find elliptic curves cutting pitch, by making C D equal C B. Set off on each side of D half width of rail. Then square up the lines; which gives the point required. Have the board ready for the mould. Lay it on, and mark the intersections on the pitch, as shown.

Find points to insert pins. This done, strike the mould with a string.

The straight shank may be any length desired, say N V. Transfer it to Fig. 2, where corresponding letters are shown. Draw joint V, which gives R O for straight shank of upper piece of wreath. Fig. 4 shows mould for this. The drawing is simple. For example: Take a piece of board, and run a gauge line, say three inches from edge. Set off a distance to equal E D, shown on small square above.

Next, square over a line, say that through O. Set off on each side of O, half width of rail. Let P, O, R equal corresponding letters on pitch to the right. Let wide end of mould, and bevel K, equal that given by square section, cutting pitch at P, also on right. Now find points to insert pins, and strike the mould.

The square section on the left shows the end joint at landing. Slab S, on upper side, being cut off square with joint, as shown.

Concave side on upper corner makes the easing. Square section on right shows the slab F. This is cut off the lower surface of shank.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

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THE COMPLETION OF S. PAUL'S CATHEDRAL.

MR. SOMERS CLARKE, jun., following up the remarks of Mr. Albert Hartshorne quoted by us last week, writes to the *Standard* as follows:—

The article which he (Mr. Hartshorne) so kindly commends is the joint production of Mr. J. T. Micklethwaite, F.S.A., and myself, and originated in a discussion which took place many months since—indeed, before the "completion" scheme was started.

To convince myself that such a treatment of the cathedral as is suggested by us would not be in any way foreign to the intention of Sir Christopher Wren, I took an opportunity of inspecting the original drawings referred to by Mr. Hartshorne, and with which he is no doubt familiar as an antiquary.

It is well known that Sir C. Wren did not desire to construct the cathedral on the present plan. I should apologise for calling attention to this well-known fact did not the arrangement as proposed by the committee appear to be so completely at variance both with the architect's original wishes and with his work as actually carried out, that I hope I may be forgiven in suggesting that amongst these drawings of Sir C. Wren's may be found one which shows what he would have done had his first design been executed.

It may, of course, be argued that this design, not having been carried out, the circumstances of the case are changed; but I venture to think that the present state of affairs simply shows that Sir C. Wren was right, and those who compelled him to change his plan were wrong. He would make the dome both the focus of the design and the church; they would have a little church put inside a big one, and it is this little church that we are trying to get rid of. The drawing to which I have referred is not that which was afterwards worked out in a large model lying neglected and forlorn at Kensington, but shows a similar plan (one may roughly say a Greek cross) internally, without the western dome and vestibule shown upon the published plan called the original design. The dome is the church, and beyond it, placed beneath a small dome projecting but little farther eastward than the transepts now project from the centre area, is arranged a small choir, with stones on a curved plan, and the altar and baldachino beyond. This is, so far as I am aware, the only plan showing choir arrangements intended for the original design.

The difference in the state of the present building would not permit of the plan being carried out in the entirety, and it would have the disadvantage of compelling every service to take place in the area suited to a vast multitude of people; but it very clearly proves that Sir C. Wren, as I before said, grasped the idea most completely, as, indeed, a perusal of the parentalia will show that the dome was the place for the people, and that the choir and altar should be close at hand, not at the end of a passage, out of hearing and out of sight.

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LEYES WOOD, SUSSEX.

THE house of which we give views is situated near Groombridge, about five miles from Tunbridge Wells, in a very charming bit of country. It is all of red brick and tiles, with local sandstone dressing. Inside, panelled with oak, ornamental ceiling, quarry glazed windows, &c., and in arrangements is like any other modern house. The whole of the works of every kind have been exceedingly well done by Messrs. Punnett and Sons, of Tonbridge, who deserve all possible credit. The architect is Mr. R. Norman Shaw.

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The *Pall Mall Gazette*, in referring to the alarm felt by some people owing to the late earthquake shock in the North, says that there is little cause for alarm, judging from past experience; for though Glastonbury was destroyed by an earthquake in 1276, yet of about 260 earthquakes that have occurred in the British Isles none have been very serious in their results, and dwellers in modern houses have at least the consolation of reflecting that they always run the risk of their houses tumbling about their ears, and of being buried in the ruins—they incur, therefore, no greater peril during a prevalence of earthquake than at ordinary seasons.

SUPPLEMENT TO THE BUILDING NEWS MAR. 31ST 1871.

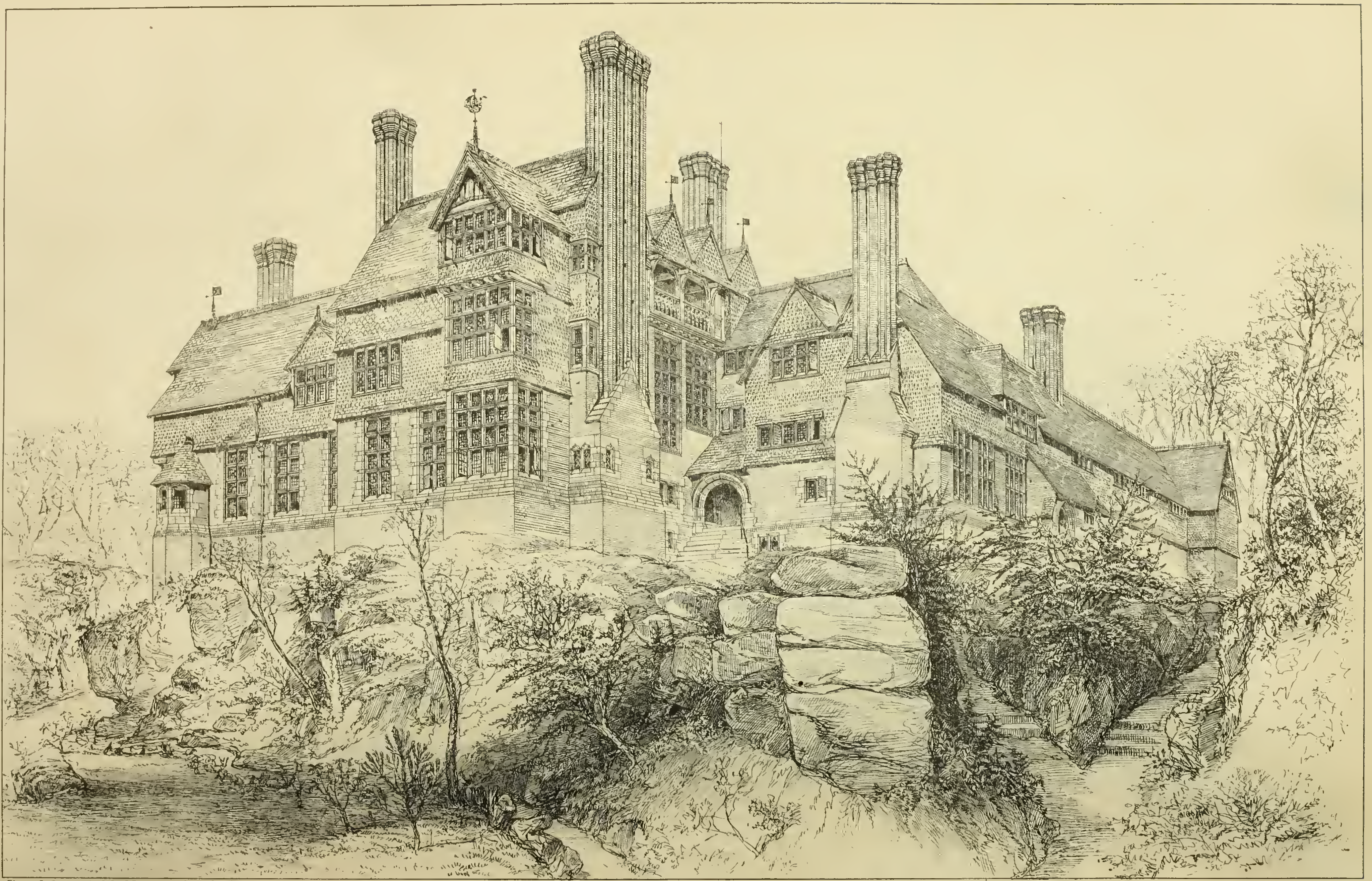

Photo-Lithographed by Whiteman & Bass London

LEYES WOOD, SUSSEX

Supplement to the Building News Mar. 31st 1871.

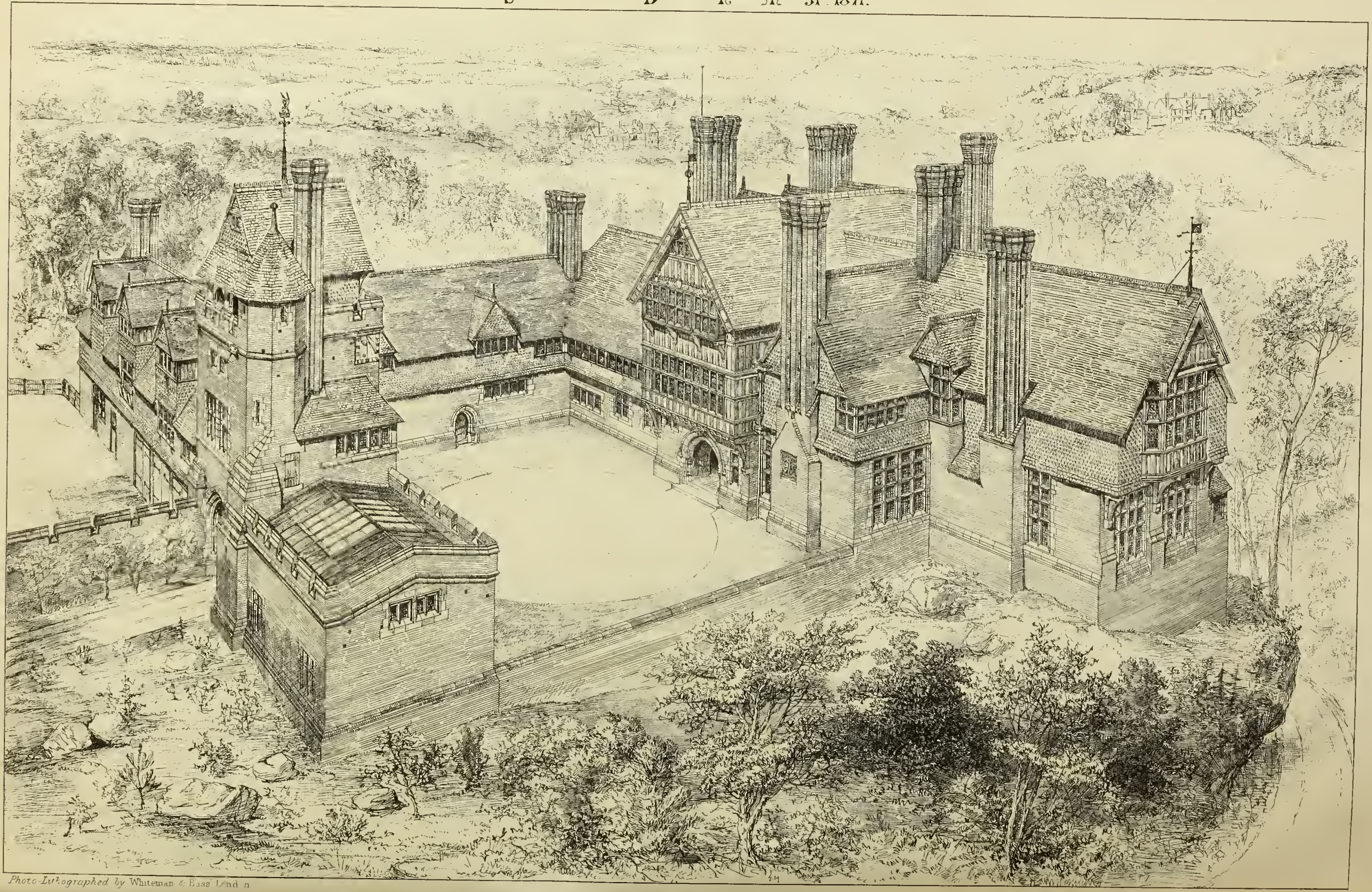

Photo-Lithographed by Whiteman & Bass Lond n

LEYES WOOD, SUSSEX. BIRD'S EYE VIEW

COMPETITION FOR THE BIRMINGHAM ASSIZE COURTS.

THE PLANS.

AN OPINION as to the architectural merits of the designs, if not more easy to form, is, at least, more convenient of expression than a detailed criticism of the various plans. Indeed, it is impossible to describe and compare the arrangements proposed by 29 architects for a building comprising so many requirements within the limits of an available space. And yet this is, perhaps, the very point on which explanations are most required, since it is the one where unprofessional people are the least able to form a sound judgment. It is in reality the weakest part of that system of competition which is not strong anywhere. The designer does not know, except from the very general terms of the "Instructions," what the wants and wishes of the employer may be. He cannot very often tell the relative importance which different departments hold, or the connection that may exist between different departments of the municipal service. In fact, it may be asserted without reserve that a satisfactory plan can be made only after consultation between client and architect. And the argument that competition brings into notice young and gifted, but previously unknown men, applies with very little force to this branch of the subject. Skill in planning can only come from long experience and practice. There may be heaven-born artists who come into the world endowed with the power to make beautiful architectural designs—although the present collection does not present overpowering proof of that fact—but we never heard of an inherent genius for the arrangement of plans. At all events, although there are some very clever and thoughtful plans amongst those which are submitted, there are none of such great merit as to demand instant appreciation.

There seems to be some difference of opinion amongst the competitors as to an initial question—namely, whether it is necessary that a great public building should have its principal entrance in its main front, or whether you should enter at the back, or round the corner, or up an entry. It may be necessary to premise that, although the building has frontages to three streets and to one foot-passage, yet the Ann-street front is of greatly superior consequence to the rest, and presents a point of view of such importance that it will necessarily form the line for the principal elevation. It would appear, therefore, that this front must be either appropriated entirely to the Assize Courts, or divided between them and the principal municipal buildings. And this has been recognised by the majority of the architects. The following ten give a portion of Ann-street to the courts and the other part to the corporate offices—viz., "Et juste et Vrai," "Ex pede Herculem," "Knight in Armour," "Let there be light," "No. 9," "En avant," "Alpha," "Labor omnia vincit," and "Forum." This appears on the whole to be the best general arrangement. Nine of the plans—those, namely, sent by "Vera," "Pallas Athena," "Square," and "T Square," "Quid erat faciendum," "Si je puis," "Fidelitas," "Palmam qui meruit ferat," and "Concentration"—give the whole of the main street to the courts, some of them placing the local dignitaries entirely at the back and some at the sides. The whole of the nineteen, however, do not place the entrance to the courts in Ann-street, and, so far, those which do not, appear to us to be inferior.

In looking over the plans we were painfully struck by the fact that a great number of them are deficient in one of the first qualifications of a good plan, the proper provision of light. Our note-book contains distinct notices of twelve of the designs to which this objection applies with great force, and there are others which are open to it in a less degree. The most common form which the mistake assumes, and the one in which it is most objectionable, is the provision of long corridors of communication to important offices and departments which would, if built as drawn, be almost pitch dark. We cannot help thinking that inexperience in dealing with large buildings must be the cause of this prevailing error, and it is just the result to be expected from competition.

Another point of weakness seems to be the inability to keep the various departments distinct in plan, and yet to group them together so as to form one great design. Some of the designs mix up the corporate offices and the appendages to the courts in a very confused manner, and more than one in avoiding this fall into as great a mistake in entirely separating the two parts by means of a roadway or passage, so that the general effect would be that of two medium sized buildings instead of one important structure. We restrict ourselves to these very general observations, because it would be unfair to go into particulars of faults without explaining the merits of each set, and it is impossible to give so long a description of each as would enable a reader to obtain a knowledge of its details.

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S. PAUL'S CATHEDRAL AND THE SCIENCE OF ACOUSTICS.

SOME few months ago we called our readers' attention to the doings at S. Paul's Cathedral, and more particularly to the moving away of the fine organ from its original place in the centre of the screen, immediately eastward of the dome, to the centre of the choir, and then contended that a more unfortunate act, artistically and acoustically, could not have been committed. Some of our readers did not agree with us, and contended with some earnestness that what was done by the removal of the organ from the loft to the central archway of the choir was a positive benefit, and actually added to the musical effect, and that both organist and choir of singers were helped by the change. It may surprise such to be informed that there is now a proposition afoot for actually moving the organ back into its old place; not, it is true, as it before stood on the organ loft, but on ground close to where it stood before its removal. The subject is so important to all who care anything about cathedrals or cathedral organs that a few words of protest against the contemplated change, as it is proposed to be executed, may not come amiss, and may even assist those who are about to carry the work into effect. It is certainly one of the most curious subjects, both acoustically and musically, and we refer to it in the hope of bringing back things to the state in which Wren, the great architect of the cathedral, and Bernard Smith, the organ builder, left them. It was, as far as we know, the most magnificent idea for managing and diffusing sound in existence, and worth, we hope, a little thoughtful consideration to restore.

We must trouble the reader with a few dimensions, and ask him to refer to a plan of the cathedral. The organ of S. Paul's, a singularly noble one, and of which a good deal that is new might be said, was built by Bernard Smith in some such way and love of the work as the famous Straduarius bestowed on violins—and all possible fame and honour be due to him for it, and for what he did with it—stood, before the recent destruction, on a rood or organ loft, immediately beyond or eastward of the monuments of Nelson and Cornwallis. The floor of the loft was about 15ft. from the level of the cathedral pavement. The organ is, or rather was, about 30ft. high, and about 18ft. broad, and any one who will glance at a section of the church will see how admirably Wren proportioned the organ-case to the space it stood in, and to the rood loft it stood on, This organ rested on marble columns partly, and partly on the return stalls of the choir, which were arranged just as the present stall work is at Westminster Abbey, the whole arrangement being a purely Mediæval one. The spaces between the columns and the wood work of the stalls were open, but filled in with elaborate iron gates, now buried in the crypt, but the backs of the stalls themselves towards the dome were panelled. The singers, be it observed, were placed about midway in the choir, and at about the proper distance from the organ for musical purposes. The organ was some 30ft. back from the line of the dome, so that it stood not under the dome, but under the vaulting of the choir. Taking the arrangement as it was, it certainly would seem to have been as near perfection as anything can be to finite powers; indeed, we may safely say that no one could have been more surprised at the majesty of the result of it than Bernard Smith himself, for no mere thinking about it and contriving on paper could have suggested it. Now the reader will observe that all this is gone, and as utterly destroyed as it was possible. "The deans' stall" now forms a cupboard on the north side of the communion table, and holds a few surplices, and the "sub-deans' stall" forms another cupboard on the south side of the communion table, and contains probably a few brooms and dusters, there being in reality no other place to put the said stalls but in the crypt with the old iron railings and useless gates!

We hope many will go to S. Paul's to see that all this is real. There are three arches on either side in the choir, and the further ones next to the communion table are "opened out" so as to admit, in the afternoon (not in the evening) a few scattered people to hear the sermon—not the service, for they are, as will be seen on a plan, out of sight of that. This is important to note, because it was one of the reasons for the alterations. The organ, (*i.e.*, all that remains of it) stands under the comparatively low centre archway on the north side of the choir, and the organist sits in a sort of little pit on one side of it. He can and does play on this organ; but how is most surely a special and daily miracle. Light is thrown on the keys by a common shop or dark office reflector, otherwise the music must be felt, for it could never be seen. It is all of it open to common eyesight, but almost incredible, and there is nothing like it anywhere!

But this is not all. So impossible is it found to be to work things satisfactorily in this miserable present arrangement that a proposition is now a foot to move the organ back again to its former place near the line of the dome, but to commit over again the fatal mistake made at Westminster Abbey—viz., by the cutting the organ in two, and the placing one bit of it on the site of Nelson's monument, and the other bit of it on the site of Cornwallis's monument, and, we may suppose, on the ground. If the ingenuity and perversity of things did their best to spoil the organ before by taking it down from its proper place and burying it under a small archway, now is it quite certain that the plan just proposed is yet more fatal still, for it is but to repeat the Westminster mistake of dividing what is, and should be, one instrument into two, and so to render the correct playing on it an absolute impossibility, for the sound from it must be necessarily cut in twain and divided, as well as the pipes from which it comes. In a responsive chant it can be worked, but in a fugue it is fatal.

But bad as is the position of this unfortunate organ at present, it is better than this proposed plan and new thought of destruction. But some may perhaps say, in all simple astonishment, Why this at all? Why not put things back again as they were before? What so easy to do? The "choir" of S. Paul's is ample, more than ample, for the week-day services, and for the Sunday services both morning and afternoon and evening. Why not all of them under the dome, with a temporary communion table, if need be, as in some Continental churches, westward of the screen; or, better still, under the centre of the dome as in S. Peter's? And again, while we are about it, why should any attempt be made to do what is simply and obviously impossible —to make people hear (truly an acoustic problem), more than 100 feet, for that is about the diameter of the dome space, away from the preacher, and beyond which it is almost impossible to hear anything. Let us remind the reader that there are two organs now in S. Paul's, the second one, in the south transept, close to the wall, is elevated nearly to the very roof itself, for the purpose, when first put up, of providing a slanting gallery, like a theatre gallery, for the singers at the special evening services. All this arrangement has, however, lately disappeared; the singers' gallery has been levelled almost to the ground, so that the monster organ is fairly up in the air, and away from everything, and the organist finds himself some thirty or forty feet from the floor level of the church and the choir of singers! It is, of course, no use lamenting over the dreadful destruction that has fallen on this most unfortunate building; the old iron work is probably half rusted away, and the remains of the fine woodwork is rotting into dust in the crypt, and there is no possible means of bringing back the colour of the stone surface on the walls, but one thing may yet be done: the replacing of the organ and stall work as they were, and as Wren left them—a true "restoration," the first in the annals of cathedral history. It *is* possible to restore the choir of S. Paul's; it is impossible to restore that of Westminster Abbey, and the motive to do this is the very highest possible, for by no other means can the same effect be produced. It would be very hard to say which was the best fitted for each other acoustically, the organ or the church which contains it. It would almost seem as if Sir C. Wren built S. Paul's for the organ, and it is quite certain that Bernard Smith built the organ for the cathedral. No two things of beauty and fitness ever came together before so felicitously, and no such musical effect ever before came from the pipes of an organ, consequent not only on the organ and the building, but on the position of the instrument in it, and on the mode in which it was made to stand on the loft, and on the admirable position of the organist and choir. We shall always contend that it was a perfectly unrivalled artistic and mechanical and musical feat, and worthy alike of the genius of the architect and the organ builder.

To treat this great subject worthily is obviously out of the question in so slight a notice as this, but it is impossible to pass over one thing appertaining to it. Most readers have probably heard, and many will remember, the fine "services" by Attwood. Attwood was organist of S. Paul's, and it has always struck us that he was inspired by the place to write them; they are just fit for it, and contain passages which the composer must have wrought out especially for the cathedral, and which he heard there, but could hear nowhere else. These magnificent services of Attwood's are almost lost in S. Sepulchre's, from the dead dulness of the church, though they are interpreted by the same consummate master of organ playing, Mr. George Cooper, who presides at both places. The destruction, architectural, artistical, and musical, that has been effected in S. Paul's within a year or two is lamentable.

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The following candidates were elected Associates of the Society of Painters in Water Colours on Saturday:—Messrs. A. Goodwin, W. M. Hale, A. B. Houghton, H. S. Marks, A.R.A., R. W. Macbeth, and J. W. North.

The Works and General Purposes Committee of the Metropolitan Board of Works has resolved to recommend the Board to contribute the sum of £200,000 towards the expense of making a new street from Oxford-street to Charing-cross, in connection with the proposed railway to connect the Euston Station of the London and North Western Railway with the South Eastern Station at Charing-cross.

COMPETITION.

Presbyterian Church, Pendleton, Manchester.—Mr. W. H. Ward, Curzon Chambers, Birmingham, has been selected from seven competitors for the erection of a new United Presbyterian Church, at Pendleton, Manchester. The church, as designed by Mr. Ward, will be an edifice in the Early Gothic style of architecture, and will be executed in red brick, with freestone dressings, the internal fittings and open timber roof being stained and varnished. There will be a tower and spire at the north-east angle, and school-room, lecture-room, vestry, &c., at the east end. Seat accommodation will be provided for about 600 persons. The total cost, inclusive of heating, lighting, fencing, walling, &c., will be about £4,000. The following were the competing architects (invited):—Messrs. Clegg and Knowles; Ellis and Hinchcliffe; Popplewell; Price and Linklater; Seddon, all of Manchester; Marshall and Tuke, Bury; and Ward, Birmingham.

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PARLIAMENTARY NOTES.

Communication between S. James's and Westminster.—Viscount Royston on Thursday week called attention to the question which a few weeks ago he had asked of the First Commissioner of Works with reference to a communication between S. James's and Westminster by the east end of S. James's Park. The First Commissioner of Works said that unless it was absolutely necessary to enable hon. members to come to the House he could not entertain the question; but he (Lord Royston) had thought that the Government would have had the generosity to concede the right of way by the east end of S. James's Park. The hon. member for Whitehaven brought the subject forward when Mr. Layard was First Commissioner; and the question was then not only deprecated by the First Commissioner, but also by the right hon. gentleman the member for South Hants, who had previously held that office, and who said the road would lead to nowhere, and that he considered the proposition a monstrous one. He did not agree that the road would lead to nowhere, for it would form a communication between two important spots in the west of the metropolis. The strongest reason, however, that was urged against granting the request was that it would cost £25,000. The question was again asked of the present First Commissioner, who assented to the request as a temporary arrangement. This was in May last year, but from that time to the present nearly twelve months had passed, and the plan had not yet been carried out. Later last year the hon. member for Cricklade asked the right hon. member whether he intended to carry out the statement that he made to the House; and the reply was that he intended to construct a temporary road. This was in July; but later in the session the hon. member for Christchurch brought the subject again forward, when the answer of the First Commissioner was that it was too late in the session to do any good, as it would be too late to get an answer from her Majesty to the address. Under these circumstances he did not think it would be out of place to move that an humble address be presented to her Majesty, praying that she would be graciously pleased to direct that the road by the east end of S. James's Park might be opened for carriage traffic from Marlborough House-gate to Storey's-gate.—Mr. Ayrton trusted the House would agree with him in thinking that it was not desirable to trench upon the enjoyment of the parks by the public without ample cause. Every new road necessarily deprived the parks of some of the privacy and quietness which was their main attraction to those who wished to escape from the crowded and noisy streets, and therefore it was right to approach this subject with hesitation and caution. He could only judge of the necessity of any encroachment on the privacy of the parks from the expression of opinion of hon. members representing the public feeling in the matter. When in the first instance it was proposed to run a road through the ornamental portion of S. James's Park he deprecated the suggestion as being inconsistent with the reasonable enjoyment of the park (hear, hear), but he stated at the same time that if the Thames Embankment was not opened, and should King-street be blocked up, he should be ready to offer a temporary arrangement for the convenience of hon. members. However, the reverse of the contingency occurred, and thus no serious obstruction arose during last session. During the recess he knew from his own experience that there had been no such difficulty with regard to traffic in Parliament-street as to require any change of thoroughfare. Under those circumstances he came to the conclusion that there was no pressing necessity for recommending the Government to incur the expense of an alteration; and at the beginning of the session, when the noble lord inquired whether anything had been done, he stated that no communication had been made to him suggesting a change of the kind. He thought the answer should have been satisfactory to the noble lord, for it suggested that if inconvenience was felt, it would be for hon. members to call attention to the subject He did not therefore complain of the course now taken by the noble lord, and if, as appeared to be the case, the difficulty he had contemplated last session had arisen, he must consider whether steps could not be taken to guard against inconvenience. He gathered that there was a general concurrence of opinion that it would be convenient for hon. members to make use of the channel of communication suggested by the noble lord, and it would be his duty to consult with her Majesty's Government as to the expediency of making that road. He was in a position to state that the use of the road would be sanctioned. The sanction of her Majesty and the Royal family had already been granted contingently on its being required. (Hear, hear.) But he was anxious that it should be understood that he proposed to carry out this arrangement on the conditions he had mentioned last year. He ventured to suggest that the noble lord should rely upon this statement, and refrain from pressing his motion for an address, because some of its terms were ambiguous, and might be misunderstood as referring to general traffic. The road would only be open to special traffic for the convenience of hon. members.—Lord Royston then withdrew his motion.

Lines of Railway in India.—Mr. Waterhouse asked the Under Secretary of State for India what progress had been made in the construction of the Government lines of railway in India towards giving effect to the announcement made at the close of last session, that it was the intention of the Government to commence laying down railways to the extent of 800 miles, and whether any, and what, lines had already been commenced; and, if not, what the present intentions of the Government were.—Mr. G. Duff replied that in the course of the year, so far as he was aware, 645 miles of railway had been opened, but the line from Lahore to Peshawur had been commenced, and would be pushed forward as fast as possible.

Hyde Park.—Mr. Brogden asked the First Commissioner of Works whether it was intended to provide for the safety of the public desiring access to Hyde Park from the neighbourhood of Brompton, by constructing an underground communication from the south to the north of Rotten-row.—Mr. Ayrton replied that the subject had more than once been under the consideration of the Board of Works. If it was the general opinion of hon. members that such communication should be made, he should be happy to submit an estimate on the subject.

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Building Intelligence.

CHURCHES AND CHAPELS.

Aldfield-cum-Studley.—The foundation-stone of the new church of Aldfield-cum-Studley was laid on Saturday afternoon by the Countess De Grey and Ripon. The site of the new building is at the west end of Studley Park, near the obelisk, and is to be an elaborate piece of workmanship in the style of the thirteenth century. Mr. W. Burges is the architect.

Beverley.—On S. Patrick's Day, the foundation stone of a new (Roman) Catholic church and school, which have been dedicated to that saint, was laid at Beverley. The building, which is of two storeys, comprises on the ground-floor a girls' school, 79ft. by 17ft. 7in. and an infants' school, 33ft. 2in. by 17ft. 7in. The height of the schools is 15ft. clear. The out-offices of the usual description are at the rear of the building. The whole of the upper storey is devoted to the purpose of a church, and will be 70ft by 36ft., and 32ft. high to the ceiling, affording accommodation to 480 people. The roof is carried by five chamfered curved principals, and will be finished on the inside with wrought stained and varnished boarding, ample ventilation space being provided in the ceilings. The buildings are to be entirely of red stock and moulded bricks. Messrs. Hockney and Liggins are the contractors for the whole of the works, the amount being £1,500. The buildings are from the designs of Mr. Edward Simpson, architect, of Bradford.

Convent of the Assumption, Kensington-square.—The new chapel of this convent was opened on the 18th inst. by the Archbishop of Westminster. The Perpetual Adoration is the chief object of the Institute of the Assumption, and Mr. Goldie, the architect, working on this idea, has treated the sanctuary as a kind of crown, surrounding the altar with polished granite columns of elegant proportion, and with a liberal, yet sober hand, carving capitals and corbels and brackets into the richest and most varied forms. Messrs. McDonald supplied the granite colums. The lighting is by Messrs. Hart, Son, Peard, and Co. The architects are Messrs. Goldie and Child.

Newport.—A new Jewish Synagogue has been opened at Newport, Mon., on Wednesday week, from designs by Mr. Lawrence. The buildings form a façade of Romanesque character, of which the centre comprises the entrance porch, lobbies, and and stairs, the left wing being the minister's house, and the right wing the synagogue. The exterior is of black rock limestone, having a rockwork face with quoins, strings, reveals, and arches of gray brick, and Bath stone coping, corbels, and keystones. The synagogue has a group of four small ornamental windows in the lower part, lighting under the gallery set apart for ladies, and another group formed by two semi-circular headed windows, with a circular one above them, confined under a large semicircular arch, the tympanum or interval being filled with diaper Mosaic work, in bas relief, of five point stars and pellets. The minister's house, forming the left wing, is of the same character, and also has a gabled end, but not so lofty as the synagogue, but the windows and doorways are segmental-headed. The entrance porch has a wide doorway, with bold moulded brick jambs and semicircular head, under a corbelled and gabled hood, the tympanum having a quatrefoil panel of red granite, with a Bath stone chamfered margin.

Salford —A new (Roman) Catholic church, dedicated to Our Lady of Mount Carmel, was opened at Salford last week. The style of the building is Gothic, and it is constructed of red brick with stone dressings. Its breadth is 55ft. and length 100ft., but about 20ft. of the length, at the lower end, has been partitioned off for the purpose of a school, and the place reserved exclusively for devotional purposes will accommodate a congregation of about 1,000 persons. The architect is Mr. W. Halliwell, Cross-lane; and the contractors for the work were Mr. Healy, Salford (excavations and brickwork), and Mr. Morrissey, Salford (joiners' work). The cost is about £1,200.

York.—The chancel of S. Petrock's church has just been restored and beautified by Mr. Samuel Hutchison, Broadgate, at his sole expense. The old whitewash of the dome has given way to a light tinted gray, relieved by white ribs, converging to the centre-light of stained scarlet glass, which throws a warm shade over the whole. The old dark stone-painted walls are now diapered with imitation silver fleur-de-lys on a gray ground. The reredos, which was decorated under the instruction of the late Mr. Gendall, has been renovated in the same style as before, whilst the two gas brackets that formerly disfigured the chancel arches are succeeded by two handsome illuminated gas standards, springing from the altar-rails, which are powdered with blue, relieved with gold and vermillion. The chancel arch has been also diapered with a dark brown diaper on light stone ground, surmounted at each end with two fleurine crosses, whilst the enrichment over the pillars is relieved with white and gold. The super-altar is painted light stone colour, and the supports on each side of the altar are diapered with Greek crosses (black) on a rich crimson ground.

BUILDINGS.

Gainsborough, Lincolnshire.—The new county courts are now nearly completed. The old house in the Beast-market, built by E. Hawksmoor, architect, in 1759, has been very cleverly converted into offices by the architect of the Government, Thomas Charles Sorby, Esq., of London, and the court-room and the public portions forms the Beaumont-street elevation, with entrance for judge and public entrance. The material employed is red bricks and Ancaster stone, and the style is Grecian, freely treated. The old house is a large square brick building, in the style so well known, with square windows and doors, and gauged brick strings and arches. The architect has relieved this by inserting two handsome stone doorways with pediments and severe Grecian mouldings, the one in the Beast-market front especially noticeable for the clever manner in which a transom head, with small columns, has been introduced to take off the appearance of excessive height in the doorway. The ground floor is conveniently planned, and contains a large entrance hall for the public, with an open timber roof, and paved with encaustic tiles, from Messrs. Whetstone's, of Coalville, and a large court-room with all conveniences. Females' waiting-room, judge's room, jury-room, separate W.C.'s for females, judges, clerks, and the public, a large public office, bailiff's office, and bankruptcy office, registrar's room, &c. The first floor is let to the registrars for private offices, and contains three offices. The second floor contains kitchen, parlour, scullery, and two bedrooms for the office-keeper, larder, coal-house, &c. Mr. Johnson, of Nottingham, is the contractor; Mr. Freeman, the gasfitter; and Mr. Robert Phillips, the Clerk of the Works.

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The salary of the surveyor to the Hackney District Board of Works has been raised from £350 to £650.

NOTICE.

Advertisers and others are respectfully requested to forward their communications for the next number not later than 5 p.m. on Wednesday next, as the Building News will be published on Thursday, the 6th proximo, the following day being Good Friday.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—R. C., E. T. R., W. P. Mc. K., Thos. Stout, jun., J. P. S., C. B. A., W. M. and Co., Geo. Turner, J. C., T.H. E., W. B., J. P. S., S. and P., W. and B., E. K., A. S., J. H. T., W. W., Ernest, Admirer of A. Dürer, A Competitor, S. A., S. and Co., P. Bros, Art, A. T., T. H. G., W. J. W., R. N. S., S. E.

P. E. M.—Please send the explanations, with a few simple diagrams of isometrical proportion.

P. E. M. and F.—Mr. Norman Shaw.

M. J.—Your reply on isometrical drawing is simply an advertisement, and therefore not inserted.

Correspondence.

ESCAPE FROM FIRE.

To the Editor of the Building News.

Sir,—The sad accidents caused by fires in London during the past month induce me to ask for the insertion of a few lines on a subject of much practical moment. I allude to the serious risk of life annually incurred by the visitors to our seaside watering-places, where the lodging-houses, mostly tenanted during the summer and autumn months by two, three, and even four families together, are almost invariably unprovided with any means of escape by the roofs, while the staircases are very generally of wooden construction, and contracted in size. In many localities no fire-engine is kept by the town, and I have often trembled to think of the results which would almost inevitably attend the occurrence of a fire. The remedies, partial though they be, that I would suggest are:—Firstly, that local authorities generally should have their attention drawn to the fact that the London Society for the Protection of Life from Fire are willing, so far as their funds will allow, to supply fire escape ladders gratuitously, provided only that suitable arrangements are made for their safe keeping, and, failing this, that they should be urged to provide ordinary ladders to be kept exclusively for use at fires in some central and accessible spot. Secondly, that builders should be brought by pressure of public feeling to find it to their interest to construct houses with parapets, and not eaves, and having ready means of communication to the adjoining roofs. I have always been at a loss to understand why this latter point has not been rendered compulsory by our Town Building Acts, but where for the most part every man's house is his castle the necessity is not so extreme as in the crowded dwellings at the seaside. It also occurs to me that some strong, though light and portable, form of ladder might be constructed for private use, and it would be of great service if any of your readers could afford any practical suggestions on this head.—Yours obediently,

P.

THE BIRMINGHAM COMPETITION AND PENNY-A-LINERS.

Sir,—One of the greatest evils of competitions is that competitors are too often judged and criticised by those who are totally unfit to form an opinion at all in matters of art. Perhaps the very worst class of these critics are ordinary newspaper reporters, who feel obliged to say something about what is going on in their district, and in whose remarks on matters of this kind it is difficult to say whether rashness, inconsideration, or ignorance most predominates. The Birmingham competition affords such a glaring instance of this kind that I should be much obliged if you would allow me to say a few words upon it in your paper of this week. I have seen the instructions to architects, have looked through the plans with great care, and have also read the torrents of abuse which are poured upon them by these penny-a-liners. Now, Sir, how do these critics describe the amount of labour in these plans:—"At the lowest estimate, the average expenditure of the competitors in preparing the costly and elaborate plans may be taken at £100 each, or collectively, £3,000." Again: "The plans generally seem to have been prepared with considerable conscientious labour, and in many cases go into an immense amount of detail, &c." Again: "There is a vast amount of thought, labour, and cost embodied in the twenty-nine sets of drawings now on view;" and yet they would have us believe that thirty gentlemen who are in a position to spend £100 on a venture of this sort, to say nothing of time, and labour, and who include in their number, I believe, all the leading architects of Birmingham—have so failed that their labours are "unresisting imbecility," "a dreary jumble of common-place ambition," "poor and inappropriate in the extreme," "dark, gloomy, unhealthy, and unwholesome;" "feeble in conception, poor in detail, and ineffective in grouping," "fantastical congregation of deformities;" "would disgrace an architectural pupil of two years' standing;" and much more of the same tune.

Next, how do the critics speak of their own labours? "In respect to the arrangement of the plans," says one, "*fairly* to examine them would require more days' study than we have been able to spare hours." Again: "In what we have to say of the competitions, we shall speak of the designs (*sic*) only, and this generally, leaving detailed criticism and remarks on the plans to a future notice." Again: "We cannot undertake at present to do more than record our general impressions." Lastly, one says, with a sort of humility, that it is "a contest (*i.e.*, the competition), "in which chance, or caprice, or ignorance, often determines the reward."

This is a set of drawings, in which it is next to impossible for any one who has not had an architectural education to form an opinion, because perspective drawings are excluded; and it is more than probable that were these very designs illustrated by perspectives, the same critics would be loud in their praises, who now vie with one another in their condemnation, for no architect could examine these plans and not see abundance of skilful planning and able designing in them; nor could any architect read the local criticisms and believe that they had been written by gentlemen of architectural education. Apologizing for taking up so much of your space, I remain, Sir, your obedient servant,

A Critic of the Critics.

TIN-LINED PIPES.

Sir,—I lately sent you a few words in defence of the patent tin-lined lead pipes in opposition to remarks which appeared in an American paper. I have no pecuniary interest in the patent, I beg to say, and know nothing of the manufacturers, but on sanitary grounds admire the invention, and think it would be very lamentable if mistakes or malicious reports prevented or delayed its universal adoption. The owners of the patent, or manufacturers, will no doubt reply in detail to the charges made. But I should like to ask if the communications which appeared in your journal ostensibly from America bore evidence of being *bonâ fide.* They appeared so quickly after the paragraphs which elicited them as to excite no small surprise. There is naturally jealousy and ill-will in the trade respecting an article, which will much affect existing interests, and the fault-finding remarks are so opposed to experience here that the idea of some trickery at once arises. If the American experience is genuine, it can scarcely be that the pipes experimented upon were at all similar to the English production, but must have been of base American manufacture. Of the English tin-lined pipes, it may be safely asserted that the tin does not oxidise by water; that the tin does not require to be stripped off to make a joint; that the tin cannot become separated from the lead; and that the dropping of solder would not have the effect said to have occurred.—I am, &c., P. E. Masey.

[How our correspondent could ask whether the communications referred to were genuine or not we can scarcely imagine, when the name of the writer, address, and date are given. Of course they were genuine.—Ed.]

THE "CRITERION" COMPETITION.

Sir,—We have read the letter of "P. E. M." in the Building News of Saturday last, and must express our surprise that it should receive insertion in the columns of a well-conducted journal, which elsewhere characterises the building we are about to erect as "an establishment for public entertainments of a first-class character," and expresses the opinion that "Messrs. Spiers and Pond have set an admirable example."

That the writer of the letter is disposed to do us harm there can be no doubt; that he has written a letter the tendency of which to do us injury may cause it to be regarded as actionable, is also quite clear. He makes false statements and lays down unfounded premises, from which he draws the most ridiculous, but at the same time very injurious, conclusions. With what show of right does he dare to say that the building is to be "nominally a restaurant," but will no doubt "bear out the character peculiar to such a locality." What locality? Piccadilly? Though near the Haymarket, yet within sight of the Royal Academy and the houses of the learned societies—within a stone's throw of St. James's Hall and the Monday Popular Concerts—close to the best clubs, the Geological Museum, and the Gallery of Illustration, your correspondent prophecies that it will be "a central attraction of 'gay life,' and like all such places pay in proportion to the profligacy of its patrons." We trust the public know well enough that we have never connected ourselves with any disreputable establishment, and we should not now be foolish enough to endanger our reputation. The attempt of your correspondent to get out of the difficulty by insinuating that we shall fail, give up the premises, and let them pass into the hands of less reputable managers is quite unjustifiable. He states that he has seen the designs, and made himself acquainted with our intentions. If he has done so, he must be aware that the establishment in Piccadilly is intended by us to be a place for fashionable concerts—for balls such as are given at Willis's Rooms, dinners on great public occasions, select entertainments, and exhibitions of works of art. We propose to give to the public generally all the advantages of a first-class club, and the plans have been drawn with that intention. When your correspondent questions the right of the Woods and Forests to let the ground for such a building, and predicts the loss of license and "shutting up," he ventures his own singular opinion. As for his statements that the structure cannot be built for the money, and that the cost will be far more than we have estimated, we beg to say that we have more confidence in our artists and surveyors than we have in "P. E. M.," who winds up his letter by saying that the competitors have "little to expect." Does he mean that we shall not fulfil the contract into which we entered on inviting the competition? If so, we answer that the contract is fulfilled. With regard to his final expression of fear that "the whole thing would come to naught," we would advise him not to let his own failures, nor those of would-be competing friends, render him too anxious in wishing to see the failure of others. If we refrain from taking further steps to counteract the injury intended in his letter, it will simply be because we think the motive which prompted him to write it will be apparent to every reader.—We are, Sir,

Spiers and Pond.

Central Office, 38, Bridge-street, Blackfriars,
March 29, 1871.

ALBERT DURER'S ENGRAVINGS.

Sir,—It has struck me that if these valuable reproductions were accompanied by a critical notice, pointing out more in detail their great excellence, and in what their particular value consists, they would be much more welcome to the mass of your readers, especially as their enjoyment and appreciation depend on a cultivated taste, which some well-written remarks would certainly tend to develope.

An explanation of some of their beauties would assist many to enjoy them, when perhaps, unaided, they would be unable to appreciate their value. Would not some one well up in their "subtleties" write a word or two to point them out? They would then be "educators" indeed, and do endless good.—I am, &c.,

William Henry Lockwood.

10, John-street, Adelphi, W.C., March 27, 1871.

Sir,—With all deference to your many correspondents who are in favour of A. Dürer's engravings, I for one must confess that I cannot appreciate them, and would much preter illustrations of good modern buildings and composition designs of superior merit, than Dürer's engravings and Church of Lubentius and objects of antiquarian interest.

My idea is that purely architectural objects are more in keeping with the title of your journal, and such illustrations as the "Sunderland Bank" and "The Infirmary, which appeared a week or two back, are far the best.—I am, &c.,

Beccles, March 25, 1871. S. F. Pells.

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A new railway station is about to be erected at Briton Ferry. It will be a rock stonework building, with freestone dressings.

Intercommunication.

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QUESTIONS.

[2171.]—**Prussian Blue.**—Can any of your readers inform me how figures in Prussian blue can be removed from a ground tint of lake?—A Reader.

[2172.]—**Competition.**—Is the result of the competition for Victoria Hotel, Coatham, Redcar, yet made public?—F.

[2173.]—**Measurement of Masonry.**—In the event of a contract being undertaken simply to execute certain masonry at a stated price *per cubic foot*, would it be more equitable to measure full size every way of stone consumed, or strictly nett in finished work?—F.

[2174.]—**Gothic Brick Architecture.**—What is the best work on it?—S. F. P.

[2175.]—**Cutting Holes in Glass.**—How can small holes, say 1-16in. to 1-8in. diameter, be cut or bored in flat glass, thickness about 26oz.?—R. E. P.

[2176.]—**Strength of Girders.**—Will any of your numerous readers kindly inform me how it is that, though the strain in the web of a plate girder increases from the centre to the ends, yet the depth of the girder is often less at the ends than in the centre, the plates being made thicker towards the ends according to the strain? Is there any advantage in giving a curved top to the girder, as the plates can be increased in thickness, whether the top of the girder is level or arched? Also, how is the strain on the upper plates of the girder calculated when the top is arched?—$x + y$.

[2177.]—**A Land Yard.**—Will you oblige by answering, in the Building News, the number of superficial feet in a land yard, or if it is the same quantity of feet as in a pole or perch? Your so doing will greatly oblige.—C. W.

[2178.]—**Measurement of Mouldings.**—Will someone briefly describe the cymagraph, an instrument used for measuring the profiles of existing mouldings, giving its price and maker?—Maurice B. Adams.

[2179.]—**Cleaning Pictures and Picture Frames.**—Will any of your readers oblige by informing me the materials and method used in cleaning and varnishing oil paintings? Also, how to clean and renovate gilt frames?—F. T.

[2180.]—**Trihedrals.**—Can any kind reader tell me of a book which fully explains the properties of trihedrals? I find, in page 30 of Nicholson's work on oblique arches, only one case out of six is explained. Also, where to procure Mr. Barry's (of Manchester) work on groin arches, or some other practical treatise on them?—T. F.

[2181.]—**Stain on Slates.**—I laid Stourbridge ridge tiles in Portland cement, and, before the cement was fully hard it rained, and ran a little of the cement on Wyatt's Bangor tiles, which caused a stain. The architect will not certify for my contract as long as the stain is on the slates. Perhaps some reader will be kind enough to inform me how I can remove it.—F. N.

[2182.]—**Materials for Composing Gelatine.**—Would any of your numerous readers be kind enough to inform me where and how to obtain materials for composing gelatine, and how to apply it for casting ornaments in plaster? I am learning modelling, and have been recommended to you; and, being a subscriber for several years I now take the liberty to solicit your aid in this, to me, an important matter.—Yours, Modeller.

REPLIES.

[2141.]—**Hour Glass.**—If the inquiry relates to pulpit glasses, I beg to say there are none so early as the fifteenth century. Numerous specimens exist of post-Reformation date; one of them is figured in Parker's "Glossary."—P. E. M.

[2161.]—**Timber.**—The deals named are all Swedish, and the same quality as Swedish timber, but bear no comparison, either for strength or durability, with Memel or Dantzic timber, or Russian or Norway deals. If you will look at the map of the Gulf of Bothnia, and the quoted prices of timber in the "Timber Trade Review" in this paper, you will see a proof of this, notwithstanding the statements of interested parties. Architects may as well specify Swedish timber at once, and cheapen cost, as pay for Memel or Dantzic, and sanction the use of Swedish deals.—Clerk of Works.

[2162.]—**Original Design of S. Paul's.**—A ground plan of this building, as originally designed, is engraved in Elme's "Life of Sir Christopher Wren." A model of the same can be seen at S. Paul's.—P. E. M.

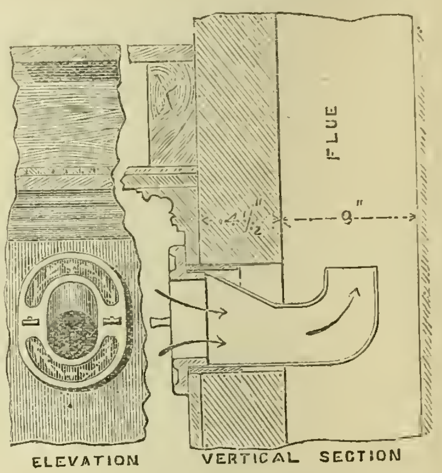
[2163.]—**Water Closets.**—Having lately had a large school in hand, I, after consideration of the rival claims of patentees, came to the conclusion that the valve closet of Jennings, Stangate, was the best, and I have found it answer perfectly. I should recommend "An Old Subscriber" to pay a visit to Jennings's manufactory, as his lavatory fittings and other sanitary inventions for schools, &c., are very satisfactory.—P. E. M.

[2165.]—**Architectural Travelling Scholarships.**—Apply to the respective secretaries of the Royal Academy and the Institute of British Architects.—P. E. M.

[2166.]—**Ventilation.**—About 100ft. per minute.—Fin Mot.

[2167.]—**Flitched Beams.**—If the beam is to carry a large weight, then a cast or wrought-iron girder is the most appropriate and economical, and, if it is a moderate load, fix up a wood beam of sufficient strength. The employment of flitched beams is gradually dying out.—Fin Mot.

[2169.]—**Ventilators for Chimney Breasts.**—After several unsuccessful attempts at making a ventilator which would discharge the foul air out of the room, and at the same time keep the smoke from coming in, my last one seems to answer the purpose. The ventilator is placed as near the top of the room as possible. A cast-iron frame is firmly fixed in the chimney breast flush with the plaster; the face casting inside of room is fastened by two thumb-screws to the frame fixed in the wall, and has a projecting flange on the back to receive the air tube. The air tube is made of tin, and is permanently fixed to flange; it is 4 inches diameter, and turned up inside of flue as shown. When the chimney requires sweeping, the thumb-screws are removed, and the front casting, with an air tube attached, is drawn out, it can be taken out and re-inserted in less than three minutes. Any particles of soot which may drop into the tube inside the flue are blown out again directly by the current of foul air rushing through, and certainly I have not seen any pass into the interior of the room. It is not necessary that the tube should be circular; my trial one is square, and made of wood covered with tin, the frame inside of room is also square, with a square hole through; it looks clumsy, and I am making a new one to above sketch, as the circular tube will have less tendency to interfere with the ascent of the smoke. Supposing the height of the flue to be 30 feet, temperature of same 82° F., and the temperature of foul air to be 62° F., then, by a formula given on page 573, Vol. XII., of the *English Mechanic*, the foul air would pass through the ventilator at the rate of about 485 feet per minute. My trial ventilator has an aperture equal to 7 square inches, and, at the above rate, will carry off about 23 cubic feet of foul air per minute. It is obviously only a makeshift style of ventilator, but it is better than none, and, by suspending a piece of white tissue paper with thread from the ceiling in front of the aperture, the action of the current of air may be witnessed.—Fin Mot.



ELEVATION VERTICAL SECTION

[2169.]—**Ventilation for Chimney Breasts.**—The Boyle valve consists of a metal plate, set at an angle of about 70° from the horizon, in a rectangular frame, the plate being pierced with nine or more rectangular apertures. Over each of these apertures is loosely placed a small damper of mica, attached by brass chains or hooks on the upper edge to the valve plate; the angle of inclination keeps the dampers closed, and prevents back draught; but they are so light that the least tendency to an up current raises them, and allows the heated air in the room to escape. They should never be placed in a smoke flue that is commonly used, as they soon get fouled up with soot. In gusty weather they chatter terribly, and so are not well suited to bedrooms. Similar valves are made with silk dampers of larger area, but I cannot say how long they would last.—Thomas Chas. Sorby, 27, Brunswick-square.

[2170.]—**Sounding Boards.**—A sounding board being made hollow, of thin, well-seasoned, hard wood, acts as a resonant reflector of sound, and should be placed in a slanting position, to throw downward and forward the sound rays which would, in its absence, be lost in the ceiling of the church. Make it in proportion to the size of the pulpit, and suspend it over the speaker, so that he will stand about one-third of its length (measured from front to back) from the back. The edges of the board may be moulded, and it may be hexagonal or octagonal. Let the under side be without panels, as it is better quite flat, and may be sufficiently ornamented by stencil work.—Fin Mot.

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The works in connection with the new Roman Catholic Church at Arundel, Sussex, have been resumed, having been suspended all through the winter.

A paragraph appeared in the Building News, March 17, respecting a tobacco pipe, said to have been dug up at Taunton with the date 1561 on it. Deception or mistake must exist in respect of this date, as tobacco is said not to have been introduced into this country until 1586.—P. E. M.

LEGAL INTELLIGENCE.

Claim for Dilapidations. — Newton and Others v. Smith.—This action, heard at the recent Sussex Lent Assizes, was brought by the executors of the late Mr. Kipping, of Brighton, against Mr. George Smith, for alleged dilapidations on the premises, 34, West-street, Brighton, and cottage in the rear, in Russell-street, at the expiration of his twenty-one years' lease of the same. Mr. Somers Clarke produced the lease and explained the covenants; he also stated that he had been over the premises, and found them to be in a very bad state. Mr. B. H. Nunn, surveyor, estimated the damage at £219 18s. 11d., though much more would be necessary to put the place in as perfect a state as it could possibly be put in. Mr. Vincent Freeman, of the firm of Cheeseman and Co., builders, Brighton, said he had been over the place, and estimated the work required to be done, as per the surveyor's specification, at £242 7s. For the defence it was contended that the dilapidations arose from reasonable wear and tear, and from the extreme age of the buildings, which it was admitted were over two hundred years old. Defendant stated that he had spent very large sums of money in alterations and repairs, but his lordship pointed out in his summing up that if he had done so it was for his own advantage, that he might realise more from the property, and had nothing to do with the stipulation to keep the place in reasonable repair. The jury returned a verdict in favour of the plaintiffs, to the extent of £65.

Westminster County Court, March 23.—Wilkie v. Godfrey and Storer.—(Before F. Bayley, Esq., judge, and a jury.) The new trial in this case, which was reported in our columns recently, took place on Thursday last, and occupied the attention of the Court the whole day. The evidence of the witness for plaintiff and defendants as sworn on a former occasion and reported in the Building News, was recapitulated at considerable length, the substance being materially the same, with the exception of the testimony of Mr. Weymouth, surveyor, of Moorgate-street, City, who had estimated the work done as worth at most £9 5s. 7d. It will be recollected that the new trial was granted on the ground that the verdict of the jury was against the weight of evidence. On this occasion a new jury was empannelled, to whom Mr. Roberts, of Clements-Inn, addressed himself at considerable length, on the part of the plaintiff, when his Honour summed up with great minuteness, and directed their attention to two questions, whether, 1st, there was any agreement, and 2nd, whether or not the work was properly executed. He then left the matter entirely in the jury's hands, who at once returned a verdict for the plaintiff for £18, less £1 for gas fittings which were very badly done.

Case Under the Metropolitan Building Act.—A Warning to Builders.—At Guildhall Police-court, Mr. Charles Burtwell, builder, of Lower Norwood, was summoned by the district surveyor of the northern division of the City of London, before Sir Robert W. Carden, for non-compliance with a notice of irregular works which existed at the premises, No. 3, Copthall-court, Throgmorton-street.—Mr. Edmund Woodthorpe said that his attention was called to the state of the party-wall of 3, Copthall-court, and 6, Warnford-court, by Messrs. Cawston and Co., they having noticed a strong smell of burning. Notice was then given to Mr. Barker, the owner of No. 3, Copthall-court, to discontinue fires, and a notice was subsequently served upon the defendant to "cut into and bore," &c., to ascertain the thickness of the chimney backs and flues. It was then found that the two flues (14 × 9 inches) had been cut into the party wall, to within 4½ inches of the face of the wall on Messrs. Cawston's side, and that some old bond timber which existed in the wall had also been cut away, a portion of which was charred. The defendant had thus rendered himself liable to a penalty of £20 per day.—Mr. Burtwell, while fully admitting the facts, said he was convinced at the time that the back of the flue was 9 inches thick, inasmuch as he saw a header and stretcher, and further tried the soundness of the wall with a hammer and chisel. He was willing, however, to rectify the irregularity at once, but the tenants in occupation refused to let him in on their side, and Messrs. Cawston on the other.—Mr. Burra, on behalf of the tenants, said that they could not let the defendant in to carry out the notice served upon him unless some suitable office was obtained for their use while the works were being executed.—Sir R. W. Carden adjourned the case for a week, in order that the parties might come to some arrangement.—At the adjourned meeting, Mr. Woodthorpe said that nothing had been done.—The defendant said he had been refused admission; but, having entered into an agreement with the tenants' solicitors to be allowed access to the premises, he was prepared to comply with Mr. Woodthorpe's notice if the magistrate would grant six days for the carrying out of the works. The case was again adjourned.—On Tuesday, the 14th March, the further hearing came before Sir W. A. Rose; but, as the defendant was not in attendance, the Chief Clerk suggested that another summons be issued for the following Thursday.—The owner (Mr. Barker) then came forward to say the reason the defendant was not in attendance arose from the fact that the work was being proceeded with; whereupon Mr. Woodthorpe emphatically denied such statement.—On the following Thursday Mr. Woodthorpe was examined as to the facts already stated, and pressed for a penalty, since the promises of the defendant had not been fulfilled.—Mr. Roberts, architect, of Laurence Pountney-lane, bore testimony to the evidence of the district surveyor.—The defendant said that since the tenants had given him permission to do the works the landlord had withheld his consent until the previous day, when the works were commenced to be rectified.—Sir W. A. Rose said he had no alternative but to fine the defendant 40s., allow the expenses of the district surveyor and Mr. Roberts, and make an order for the works to be completed within six days.

STATUES, MEMORIALS, ETC.

The Drapers' Hall.—Mr. E. W. Wyon to whom the new hall of the Drapers' Company owes many of its sculptures, has been commissioned by the company to execute two statues for the grand staircase. The subjects are Edward III. and his Queen Philippa. These have been appropriately chosen, inasmuch as the company were first incorporated in the reign of Edward III., while the English cloth manufacture is closely identified with Philippa. Mr. Wyon has just finished a model of the King.

Our Office Table.

Albert Durer.—The *Northampton Mercury* says:—"The Building News of Saturday last contains a second of the photo-lithograph reproductions of Albert Durer, to which we referred some short time ago. The present one is 'Christ Taking Leave of his Mother.' It is a most interesting example of the fine old master. Some of the readers of the Building News do not, it seems, appreciate the value of these reproductions. Strange as it certainly is, the editor appears to have received remonstrances against them. We do hope, for the credit of the architects and artisans who may be presumed to constitute the mass of its subscribers, that the objectors are limited to an extremely small number. In our day art and architecture are becoming closely associated, and they ought to recognise their mutual dependance. It is ill for architecture to be indifferent to art; for any subscriber to the Building News to ignore the value of such art as Albert Durer's. We trust these reproductions, notwith standing some eccentric objectors, will continue."

Steam Boiler Explosions.—Before the Select Committee of the House of Commons on Steam-boiler Explosions recently, Mr. Fletcher, of the Manchester Steam Users' Association, stated that he was of opinion there was danger of the boilers in some of the clubs exploding. He mentioned clubs—political and military—to which his remarks applied; and the cause he assigned for his opinion was the fact that at these clubs the boilers were so badly set that they were inaccessible for the purpose of examination. The external brickwork went round the boilers in such a way as to render it impossible for an inspector to get round them. With reference to the official report of the inspection of the boiler in one of the clubs referred to, the inspector stated that the flue did not admit of inspection. In reply to a member of the committee, Mr. Fletcher said he did not believe there was any danger of the boilers in the House of Commons blowing up, as they were new, and guaranteed to work up to 300lb. pressure. A great deal of amusement (the report says) was created in the committee-room by the questions of hon. members with respect to the safety of boilers in their clubs, the answers to which appeared to them by no means satisfactory.

The Report of the Royal Sanitary Commission.—On Wednesday evening last, Mr. W. H. Michael read a paper on this subject before the Social Science Association, at No. 1, Adam-street, Adelphi. Mr. Michael said that in the recent report it was encouraging to see re-affirmed the conclusions which all persons conversant with the subject had for many years assented to as essential to any reform in sanitary law—viz., the consolidation and amendment of all existing statutes, the compulsory execution of the new law, and the establishment of a great central authority. But the machinery by which the altered state of things was proposed to be brought about Mr. Michael strongly condemned, especially the proposal for constituting the Boards of Guardians the health authorities under which the provisions of the new law recommended by the Commissioners were to be carried out. He contended that the guardians were entrusted with certain powers as health authorities under the Nuisances Removal Act of 1860, but they had so egregiously failed to do their duty that the Sewage Utilisation Act of 1865 was passed, with the express view of taking the work out of their hands. The guardians were not qualified in point of intelligence to carry out the duties proposed to be entrusted to them by the Royal Commission.—In the discussion which followed, Drs. Rogers, Stallard, Pearce, Wylde, Farr, Druitt, Mr. F. S. Powell (one of the Sanitary Commissioners), Mr. Rawlinson, and the chairman (the Earl of Shaftesbury) took part. We may possibly give a more extended report next week.

Iron and Steel Institute.—The Iron and Steel Institute inaugurated its annual conference on Tuesday by a meeting at Willis's Rooms, London, the Duke of Devonshire presiding. Mr. Henry Bessemer read a paper on steel, and stated that he was preparing a series of tables for the use of engineers, which would furnish the most accurate basis as to the use of steel for works of every kind. He was of opinion that the time had come when a uniform pattern of rail for railways should be adopted. The summer meeting of the Institute will be held in South Staffordshire.

The Royal Commission on Scientific Instruction.—The first report of the Royal Commission on Scientific Instruction, of which the Duke of Devonshire is chairman, has been issued. It recommends the consolidation of the School of Mines and the College of Chemistry as a science school, to be governed by a council of professors. Mathematics, it is proposed, should be added to the courses of instruction now given, and sufficient laboratories and assistance for giving practical instructions in physics, chemistry, and biology should be provided. The Commission recommends that the science school should be accommodated in the buildings now nearly completed at South Kensington, for the projected school of Naval Architecture and Science.

The International Exhibition of 1871.—Mr. Edward Hall, F.S.A., having been deputed by the Commissioners for the International Exhibition of 1851 to give a number of lectures or addresses explanatory of the system on which it is proposed to conduct the annual International Exhibitions the first of which is to be held this year, gave his first address on the subject in the hall of the Society of Arts on Tuesday evening last. The substance of Mr. Hall's remarks is (or ought to be) well known to our readers, as the conditions for exhibitors, &c., have been set forth long ago in these columns. The discussion was spun out to an inordinate length, and Lord Lyttelton, who presided, seemed glad to quit the chair when the talking was done. Several suggestions were thrown out by the various speakers, such as taking means for inducing the railway companies to reduce their fares for the accommodation of workmen coming to the Exhibition, opening the exhibition in the evening and on Sundays, &c., and reducing the rate of admission on certain days by one half or more. These, and other suggestions which were thrown out, Mr. Hall undertook to bring efore her Majesty's Commissioners.

Timber Trade Review.

Prices, March 28.—Per Petersburg standard—Swartwick mixed yellow, £8; Stockholm mixed handsawn yellow, £6 10s.; ditto white, £5 15s.; Sundswall third yellow, £6 10s. to £7 10s.; Wifsta Warf yellow, £8; Wyburg first mills own yellow battens, £9; Archangel second yellow, £9 5s. to £11; Bjorneborg mixed millsawn yellow, £7 to £7 5s.; ditto mixed white, £6 5s.; Fredrickstadt first yellow, £8 5s.; ditto second yellow, £7; ditto third yellow, £6 10s. Gamla Carleby first millsawn yellow, £9 to £9 5s.; Gefle mixed yellow, £9 to £11 10s.; ditto second yellow £7 10s.; ditto third yellow deals, £9 to £9 10s.; battens, £8 10s. to £9; ditto fourth yellow planks, £8 10s. to £9; deals, £8 5s. to £8 10s.; battens, £7 15s. to £8; Gothenburg mixed white, £7 15s. to £8; Holmsund mixed yellow, £9 to £11; Hernosand mixed yellow, £8 10s.; ditto third yellow, £7 15s.; Sandarne, third yellow, £7 15s. to £9 5s.; Swartwick fourth yellow, £8; Sund common yellow, £7 15s. to £9; Soderham common yellow, £7 10s. to £8; Nefsen millsawn white, £5 5s to £6 15s.; Wasa yellow, £6 10s.; Husum third yellow £8 15s.; Jacobstadt first millsawn yellow, £8 5s. to £9 10s.; Kungsgarden third yellow, £8 10s.; Normaling mixed white, £6 10s. to £7; ditto third white, £6 to £6 5s.; Onega second white battens, £7 5s.; Petersburg first white, £7 10s. to £9; Quebec pine, 12ft. 3 × 11, first bright, £9 10s.; second bright, £14 to £14 10s.; second floated, £12 10s.; second dry floated, £12 15s.; third bright, £9; third floated, £9; third dry floated, £9 10s.; Quebec first red pine, 3 × 11 inch, £14; ditto second red pine, £12 per 120, 12ft., 3 × 9; Matane first spruce, £15 5s.; Quebec first spruce, £15 5s. to £18 5s.; ditto third spruce, £13 5s. to £13 10s., St. John's unsorted spruce 9ft., £11.

Per 120 12ft., 2½ × 6½.—Dram second yellow, £7; ditto third yellow, £6 5s.

Flooring boards, per square 1in. best Fredrickstadt, 9s. 9d. to 10s. 3d.; ditto first white 1in., 8s. 9d. to 9s.

Trade News.

TENDERS.

Greenwich.—For New Baptist Chapel, South-stree Greenwich. Chas. G. Searle and Sons, architects.

Hammer	£5352
Dove, Brothers	4515
Patman and Co.	4494
Todd	4489
Higgs	4343
Battley	4294
Dover	4156
Stoner	3989
Enuor	3935
Copper	3370

Battersea.—For new buildings at Battersea for the Dogs' Home. Quantities supplied by Messrs. Pain and Clark:—

Bracher and Son	£1998
Colls and Sons	1896
Wieks, Bangs, and Co.	1895
Manley and Rogers	1827
Thompson	1740
Tully	1680
Cooke and Green	1667

Camberwell.—For rebuilding Camberwell Greeneoat Schools, St. Giles's, Camberwell. Quantities supplied by Messrs. Pain and Clark:—

		Credit for old materials.
Tully	£5400	£54
Pritchard	4957	85
Hart	4940	125
Henshaw	4880	110
Nightingale	4870	
Manley and Rogers	4870	110
Carter and Son	4787	60
Thompson	4750	120
Hill, Keddell, and Waldram	4650	105
Cooke and Green	4525	95
Crabbe and Vaughan (accepted)	4332	175

New Cross.—For four shops. Tolley and Dale, architects:—

Jerrard	£828
Feast	715
Thomas	680

Brighton.—For excavating site for three mansions, Marlborough-place. Mr. J. Hill, surveyor and architect.

Ransbottom	£250
Lockyer	200
Blackmor and Howard	190

Swansea.—For the erection of Wesleyan day-schools and elass-rooms, Lower Oxford-street, Swansea. Thomas Davies, architect.

Thomas (Carmarthen)	£941
Williams	932
Thomas, Watkins, and Jenkius	830
Rees	800
Jones	790
Rosser	775
Morgan	775
White	695
Davis and Morgan	670

Bristol.—For the erection of house and shop, Vietoria-street, for Mr. Harris. Plans and quantities supplied by Mr. Clontman, Exchange-buildings, surveyor:—

Bevan and Sons	£544	0	0
Davis and Son	542	0	0
Surveyor's estimate	520	5	0
Hamblett	520	0	0
Diment	515	0	0
E. C. Howell	499	0	0
Messrs. Church and Phillips (accepted)	490	10	0

London.—For the re-building of Nos. 155 and 156 Aldersgate-street, City, for Messrs. M. and N. Salomans' Mr. B. Tabberer, architect. Quantities supplied by Messrs. Franklin and Andrews:—

T. Little	£2198
J. Sewell & Son	2144
T. Rider & Son	2120
G. Pritchard	2085
F. Mark	2039
Perry Brothers	2037
R. Palmer & Son	2035
A. M. Coben	2020
Jane Pritchard	1997
Merritt & Ashby	1995
Browne & Robinson	1980
Henshaw (accepted)	1955

Regent's Park.—For stables, including fittings, for W. S. Burton, Esq., Inner Circle, Regent's Park. Mr. H. Saxon Snell, architect:—

Dove Brothers	£1455
Chappell	1285
Howard Brothers	1244
Gibon Brothers	1196
Manley & Rogers	1147

Wandsworth.—For Royal Patriotic Fund Boys' School, Wandsworth, including engineering, drainage, gas, and fittings of every description. Mr. H. Saxon Snell, architect:—

Higgs	£22345
Hill, Keddell, & Waldram	21683
Howard & Co.	21530
Henshaw	20975
Chappell	20326

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Leeds, April 3.—Building new bridge. Quantities supplied. Bridge Office, 19, Corn Exchange, Leeds.

Isle of Ely, July 25.—For an iron bridge across the river Ouse, at Littleport. F. M. Metcalfe, Clerk of the Peace, Wisbeach.

Oldham, April 5.—For the erection of new business offices, entrance lodge, &c., for the Gas and Waterworks Department. Thomas Mitchell, architect, Oldham.

London.—Metropolis Management Acts (Plumstead Parish).—April 5.—For laying down and constructing 2,700ft. run of 3ft. by 2ft. brick sewer, from Crescent-road, through Sandy-hill and Brookhill-park, to Fox-hill. J. Murray Dale, Clerk to the said Board, Plumsted District Board Offices, Old Charlton, S.E.

Abingdon, April 8.—For the restoration and repairing of S. Helen's Church. The Ven. Archdeacon Pott, Abingdon Vicarage.

Staffs., April 13.—For the erection of a small house, farm buildings, and bridge at Stanley, near Endon, for Mr. Isaac Robinson. Mr. Ralph Dain, architect, Shakespeare-buildings, Hanley.

Mirfield, May 1.—Warming of the parish church. G. G. Scott, architect, Spring-gardens, London.

Gorleston and South Town, April 3.—For the construction of about 3,300ft. run of from 2ft. to 3½ft. brick-sewer, and about 7,700ft. run of pipe-sewer. Samuel B. Cory, Clerk to the Board.

Rochdale, April 7.—For furnishing the new town-hall, Rochdale. Mr. W. H. Crossland, the architect, 2, Carlton-chambers, 4, Regent-street, S.W.

Barrow-in-Furness, April 6.—For the erection of chapel and other buildings for the proposed new cemetery. C. F. Preston, town clerk, Municipal Offices, Barrow-in-Furness.

Midland Railway, April 3.—For the erection of an engine shed and other buildings at Wellingborough. James Williams, secretary, Derby.

Trinity-House, Hull, April 5.—For the erection of certain new buildings, and for alterations at the farm at Preston (Somerden), in Holderness. Edward S. Wilson, secretary.

Basingstoke Waterworks, April 29.—For supplying and delivering of about 190 tons of several size pipes. Messrs. Russ and Minns, 9, Victoria-chambers, Westminster, S.W.

Wanstead Local Board of Health, April 29.—For the formation and satisfactory completion of a certain intended roadway, with drainage and other works. John Rogers Jennings, Clerk and Solicitor to the said Board.

Weybridge, Surrey, April 6.—For the erection of a house at Addlestone, near Weybridge. Architects, Messrs. Barnett and H. Hook, 3, Verulam-buildings, Gray's Inn.

Clitheroe, April 15.—For the whole or any portion of the works required in the erection of a new workhouse. John Eastham, Clerk to the Guardians, Clitheroe.

Mirfield Parish Church, May 1.—For the warming of the new parish church. R. Lee Rayner, solicitor, Mirfield, honorary secretary to the Building Committee.

Stockport, April 11.—Five separate contracts for paving, sewering, &c., streets. Quantities furnished. Borough Surveyor, Carr Green, Stockport.

Lancashire and Yorkshire Railway, April 18.—For supplying oak scantlings for waggons. Mr. Fay, carriage works, Miles Platting, Manchester.

Kirby Fleetham, April 22.—For restoring, refitting, and enlarging the parish church at Kirby Fleetham. John Booth, Esq., Kellerby Hall, Catterick, Yorkshire.

Leeds, April 11.—Three shops, &c., in Call Lane. Quantities supplied. C. R. Chorley, architect, Leeds.

Blackburn Sewage Irrigation Works, April 12.—For the execution of the main outfall sewage conduits, about three and a half miles in length, and comprising about 650 yards of tunnelling. C. G. H. Beck, Esq., Town Clerk, at his offices, Town Hall, Blackburn.

Upminster (Essex), April 9.—For the drainage of an estate. Russ and Minns, 9, Victoria Chambers, Westminster, S.W.

Nuneaton Local Board of Health, April 8.—For the execution of certain works of main drainage, of about 7,300 yards in length, of brick, stonework, and cast iron pipe sewers, sewage works. John Eastlin, Clerk, Nuneaton.

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			Per 1,200 Slates.	Equivalent to per square
Best Green	Slates	14 by 7	2 17 6	16s. 6d.
Do.	do.	13 by 8	2 17 6	16s. 6d.
Do.	do.	13 by 7	2 5 0	14s.
Do.	do.	12 by 7	1 18 6	13s.
Do.	do.	12 by 6	1 7 6	11s.

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Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street, Westminster.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

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METALS.

Lead:

Pig—Foreign	per ton	£17 17 0	£18 0 0
„ English W.B.	do	19 15 0	00 0 0
„ Lead Co.	do	19 0 0	00 0 0
„ Other brands	do	18 7 6	18 10 0
Sheet Milled	do	18 10 0	19 0 0
Shot, Patent	do	20 10 0	21 0 0
Red or minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry.	do	27 0 0	0 0 0
„ ground in oil	do	0 0 0	0 0 0

Copper.

British—Cake & Ingot	per ton	72 0 0	00 0 0
Best Selected	do	74 0 0	0 0 0
Sheet	do	75 0 0	77 0 0
Bottoms	do	79 0 0	00 0 0
Australian	do	71 0 0	74 10 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars, cash	do	64 10 0	66 0 0
„ Refined ingot	do	71 0 0	73 0 0
Yellow Metal	per lb.	0 0 6½	0 0 7¼

Iron.

Pig in Scotland, cash	per ton	2 14 4	0 0 0
Welsh Bar, in London	do	7 0 0	7 10 0
„ Wales	do	6 7 6	6 12 6
Staffordshire	do	6 15 0	7 0 0
Rail, in Wales	do	6 15 0	7 0 0
Sheets, single in London	do	9 5 0	10 5 0
Hoops, first quality	do	8 15 0	9 5 0
Nail Rod	do	7 7 6	7 15 0
Swedish	do	9 15 0	10 0 0

Timber.

Teak	load	12 0 0	13 0 0
Quebec, red pine	„	3 15 0	4 15 0
„ yellow pine	„	4 5 0	5 5 0
St. John N.B. yellow	„	0 0 0	0 0 0
Quebec oak, white	„	6 0 0	6 5 0
„ birch	„	3 15 0	5 0 0
„ elm	„	4 0 0	4 10 0
Dantzic oak	„	5 5 0	6 10 0
„ fir	„	2 10 0	4 10 0
Memel fir	„	3 0 0	4 0 0
Riga	„	3 5 0	3 10 0
Swedish	„	2 5 0	2 15 0
Masts, Quebec red pine	„	4 0 0	6 5 0
„ yellow pine	„	4 0 0	6 5 0
Lathwood, Dantzic, fm.	„	3 0 0	5 0 0
„ St. Petersburg	„	5 0 0	5 10 0
Deals, per C., 12ft. by 3 by 9in.,			
Quebec, white spruce	„	12 0 0	17 10 0
St. John, white spruce	„	12 10 0	14 0 0
Yellow pine, pr reduced C			
Canada, 1st quality	„	18 0 0	19 10 0
„ 2nd do	„	12 15 0	13 10 0
Archangel, yellow	„	11 10 0	14 10 0
St. Petersburg, yellow	„	13 0 0	13 10 0
Finland	„	7 0 0	8 0 0
Memel	„	0 0 0	0 0 0
Gothenburg, yellow	„	8 10 0	10 10 0
„ white	„	8 10 0	9 10 0
Gefle, yellow	„	10 10 0	12 10 0
Soderham	„	8 10 0	12 0 0
Christiania, per C., 12ft. by 3 by 9in., yellow	„	10 0 0	12 10 0
Flooring boards, pr square of 1in., first yellow	„	0 7 6	0 10 6
First white	„	0 7 0	0 9 6
Second qualities	„	0 6 0	0 7 0

Oils, &c.

Seal, pale	per tun	37 10 0	38 0 0
Sperm body	„	84 0 0	0 0 0
Cod	„	35 10 0	0 0 0
Whale, South Sea, pale	„	36 0 0	37 0 0
Olive, Gallipoli	„	49 0 0	0 0 0
Cocoanut, Cochin, tun	„	48 0 0	48 10 0
Palm, fine	„	38 0 0	38 10 0
Linseed	„	32 0 0	0 0 0
Rapeseed, Eng. pale	„	46 0 0	00 0 0
Cottonseed	„	28 0 0	33 10 0

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BANKRUPTS.

PUBLIC EXAMINATIONS.

April 25, S. S. Wilson, Burton-street, Pimlico, builder.—April 18, T. Hutchings, late of Pudding-lane, City, contractor.—April 25, W. Banham, Purleigh, Essex, carpenter.—April 26, C. Castleman, Westbourne Park-villas, Bayswater, timber dealer and brick manufacturer.—April 18, J. Seal and J. Everard, Nuneaton, brickmakers and stone merchants.—April 18, T. Lishman and G. D. Leng, Stockton-on-Tees, ironfounders.—April 24, F. Haythorp, Ramsey, Hunts, builder.

DECLARATIONS OF DIVIDENDS.

W. Barter, Bramshaw, Hants, builder, div. 3s. 6d.—A. Baker, Aclam-road, Westbourne-park, builder, div. 6d.

DIVIDEND MEETING.

April 19, P. Millican, Stanton, Suffolk, builder.

SCOTCH SEQUESTRATIONS.

James Young, Glasgow, plasterer, March 28, at 12.—Hugh Drummond, Crossgates, contractor, April 5, at 12.

PARTNERSHIPS DISSOLVED.

Robinson and Mather, Newcastle-upon-Tyne, painters—Clulee and Co., Birmingham, timber and slate merchants.—Val de Travers Asphalte Company (Limited).—Raynor and Lord, Farnworth, builders and brickmakers.—S. and J. Thornton, Bradley, Yorkshire, slaters.—Gale and Ormston, Sunderland, brass founders and plumbers.—Dickenson and Son, Goole, painters.—Vulcan Iron Works Company, Ipswich.

Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The "Civil Service Gazette" remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast table with a delicately-flavoured beverage, which may save us many heavy doctors' bills." Each packet is labelled—James Epps and Co., Homœopathic Chemists, London.

THE BUILDING NEWS.

LONDON, FRIDAY, APRIL 7, 1871.

FLAT CARVING AND SURFACE ORNAMENT.—I.

THE styles which make most use of surface ornament are naturally those which have the largest amount of flat wall surface to deal with. They are for the most part Southern rather than Northern styles, and Early styles rather than Late ones. When any style had passed its prime and run to wiriness and fritter, there were no broad spaces left to decorate. All the foliage was then disposed in lines or detached spots, for the simple reason that there was scarcely anywhere else to put it. In our own country, Norman and Early English buildings show the best examples of flat carving. In the Decorated period it has come down, in most cases, to a mere diaper or powdering, and in the Perpendicular one it was all but extinct. Tracery and imitation tracery then covered everything, and sculptured ornament was almost superseded by this easiest and most worthless mode of decoration. It is in a simple and massive class of building that flat carving finds its natural home; and it may not be useless to the cause of architecture to give a series of sketches showing with what beautiful detail such a class of building may be adorned.

The illustrations given to-day are all from buildings in Toledo: the centre one from the Palacio de los Ayalas, the others from the Casa de Mesa. They are of singular but interesting character, being, in fact, a kind of hybrid between Gothic and Moorish art. They show the naturalism of the former along with the rigid conventionalism of the latter, and they do this on the characteristically Moorish plan of having two planes of decoration. The lower plane, the groundwork of the principal pattern, is covered with a sort of irregular diaper of leaves, lapping over and intersecting each other without any visible stem. These leaves are of a nearly uniform shape, and arranged in pairs. Each pair makes a kind of V, except that its sides are convex to each other instead of being straight. They have a midrib on their lower edge, and veins starting from this and curving round towards the margin: and their general effect is not unlike that of the two terminal fronds of the common brake fern seen in profile. But, as before mentioned, no stems or even stalks are traceable. The leaves meet and touch each other closely, so as to conceal the ground, nor can any order or arrangement be readily detected in them. They are kept in low relief, delicately worked, and not obtrusive. Above them, much more boldly carved, comes the main design, on the principal plane of decoration. It is on this that the chief care has been bestowed; it is this in which the real design is manifest, and it is to this that the background just described is meant to serve as a foil. As might be expected, therefore, it has a totally different character. It has a clear and strongly marked arrangement, a conspicuous and beautifully winding stem, and very often a type of foliage copied closely from nature. The two planes or orders together make up a design which bears inspection from every point. Seen at a distance, the principal pattern stands out clearly and without confusion: looked at more closely, it is set off to still greater advantage by the delicate groundwork on which it reposes. Highly conventional as are the subordinate forms, the whole arrangement recalls some of the loveliest effects in nature. Wherever we see a spray of foliage relieved against a distant wood, or a wild rose stem trailing over a bank of mosses and liverworts, we see an idea apparently beyond the carver's reach, and yet one so charming that it is impossible not to regret that it should be lost. In no material, however delicate, could it be sculptured with the least success: it is a phase of nature which the so-called "naturalistic" carver would infallibly miss. Strange as it may appear, however, it is by a purely conventional type that we here see it set before us. This is one out of the many cases in which there is more of nature in conventional than in naturalistic art. The latter would have tried to carve the infinitely delicate background of moss or distant forest, and have utterly failed; the former paraphrases it, and succeeds. The one too frequently aims at nothing but the outside form: the latter goes further, and seizes the life, the spirit. The most perfect work would be that which gave us both; but, if we can only have one, let it be the soul, the expression, and not merely the external shell.

It is worth remarking, however, that a closer approach to natural leaf form can be borne in flat ornament than in detached carving. Forms that would look wretchedly weak and tame standing out by themselves are pleasing and graceful when they have a solid ground to cling to. Such a type, for instance, as that in the centre of our illustration is about the last one would wish to see in a crocket or a capital. Its slender divisions and its delicate toothings would be absurd if they were alone and unsupported. They would look palpably unequal to their office if they had an abacus and a set of arch mouldings to carry; they would be far too slight even to bear their own weight if carved by themselves in stone. But merely outlined as they are here, with no office, real or apparent, but that of ornaments, the case is different. The circumstance may help to show what "conventionalism" in ornament really springs from. Several causes, indeed, may combine to influence it, but those we are about to mention seem the chief. The first is the impossibility, in most materials, of copying natural form with exactness. The greater this impossibility the more need for conventional treatment. It is possible to imitate intricate foliage in wrought metal; it is not quite out of the question to outline in marble; but what are we to do when we want to make it stand out boldly, say, in coarse limestone or sandstone? Plainly to omit all small divisions—markings, veinings, serrations—and to aim at nothing more than the most general effect of its light and shade. Here, then, is a conventional type at once, forced on us, whether we wish it or not, by the mere coarseness of our materials. But, again, suppose we have a block or corbel supporting a heavy weight, and we wish to sculpture this into foliage springing up as a support. The first thing that the eye demands is that our leaves or stems should seem equal to their office: that we should not put, to carry tons of masonry, a limp twig or fern-leaf which the weight of a finger would double up. Such a twig or leaf might pass where it only seemed to be lying on the face of the corbel—where the solid stone block, plain or moulded, was visible behind it, and obviously did all the work. But if once we cut the block itself into foliage, the fundamental need is that this foliage should seem equal to its work. It wants a strength, a massiveness, a vigour of upspringing life, which is not to be found in nature at all, for what plant would be equal to such a task as this? Hence we must intensify to the utmost the natural expression of force and vigour: must study growth and power as they are seen in living objects, and increase their effect a hundred fold as we imitate them. We have not merely to copy a natural shoot or stem, however strong, but to imagine and carve one strong enough to grow in spite of tons weight of material pressing it down. Hence another kind of conventionalism—that of Early Gothic capitals and cornices. There is no mystery at all about all this; it is only the following of common sense and palpable fitness. It is certainly no proof of incapacity on the carver's part, and nothing can be more absurd than to suppose that his conventionalisms were involuntary, that he tried to copy real leaves and stems with exactness, but was too stupid to effect it. The case was precisely the contrary; he was too wise to attempt it, or, at least, to attempt it under unsuitable conditions. He knew not only how to imitate, but how to invent; and this is precisely where he differed from most "naturalistic" carvers of the present day. Our examples this week, though some of them show a near approach to actual leaf-form, show also a large amount of skill and study in its arrangement. They are not, indeed, vine branches or chesnut boughs torn from the stem and stuck against the building anyhow. They are adapted to their place, and made architectural as well as ornamental. They are, in short, not merely nature, but nature *plus* human intelligence, and this, as it has well been said, is the distinguishing character of true art everywhere.

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VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."

IV.

THE *Villæ* described in our last article were defended, after the traditional manner of their Northern occupants, by palisades and ditches, the towns alone, during the Merovingian period, receiving anything like permanent fortification. These *villæ* were open, defended only by palisades and ditches. Under the kings of the first race feudality did not exist; the vassals were nothing but large proprietors settled on the soil and submitting to the central authority of the chief Frank; but this authority became weaker in proportion as the memory of the conquest died away, and this camp-like life became lost. The new possessors of the soil, detached from one another, separated by forests or wide desolated tracts devastated by war, could stretch themselves at their ease; they had no attacks from strangers to repulse, nor had they any need to encroach upon their neighbours' domain. Nevertheless, these men, habituated to an adventurous life, to pillage, to the most unbridled brigandage, could not become all at once tranquil proprietors, content with their part of the spoil of conquest. They made raids, as much from want of employment as for the love of gain, upon the religious establishments and the open villages—for though there was little to find there, yet there was something to take. Hence we see the monasteries and the Gallo-Roman inhabitants forsake the plains and river sides, and betake themselves to the heights, where they fortified their resting-places. The flat lands were abandoned to the owners of the soil, where, finding none but the sons and grandsons of their companions in arms, they attacked and pillaged the *villæ*. These then came to be surrounded by walls and deep fosses, but were even then weak places for defence, and in their turn these *villæ* were abandoned to the husbandmen, the Frank chieftains establishing themselves in fortresses. In the midst of this frightful anarchy, which the Merovingian kings were unable to restrain, the bishops and the religious establishments of the time struggled alone, the one by their patience and by a firmly-held principle, the other by study, agricultural pursuits, and by uniting behind their walls the last fragments of Roman civilisation.

Out of this chaos sprang Charlemagne. By the sole power of his administrative genius he organised a species of unity; he gathered up the broken thread of the civilisation of antiquity, and tried to re-unite it. Charlemagne desired to establish a *Renaissance.* He comprehended the fact that law and material force were powerless to reform and organise an ignorant and a barbarous people unless they were first enlightened. He saw that Art and Letters were the best and most efficacious means of opposing barbarism, but in the West these instruments were wanting, for the last glimmerings of the arts of antiquity had long since disappeared. The Eastern empire, which had not been overturned by the invasion of savage hordes, preserved its arts and its industry. In the eighth century, it was there that the practice of the arts had to be sought for, and notwithstanding that Charlemagne had frequent differences with the Emperors of the East, he maintained amicable relations with Caliph Haroun, to whom, in 801, he had ceded those Holy places which have caused, and which may yet cause, the shedding of so much Christian blood. In 777 Charlemagne had entered into alliance with the Moorish government of Saragossa and Huesca. By these alliances he managed to collect the knowledge of those arts and sciences which had there developed themselves, for at this epoch the Moors in Spain, and the Arabs in Syria, were the most advanced in mathematical science and the practice of the arts. From Rome, in 787, he brought grammarians, musicians, and mathematicians into France. Yet it is almost certain that he sought in Syria and in Spain for his professors of geometry, for the few monuments of Rome which date from this period demonstrate the depth of ignorance into which the builders in the capital of the Christian world had fallen. But as he was, above all things, Emperor of the West, it was necessary this all should come from Rome, and he did not wish it to be thought that he had need to seek elsewhere for enlightenment. Thus to that Roman *Renaissance* he wished to make, he added foreign elements. He could create for himself a government based upon Roman tradition; he could mould his laws on the Roman model; he could compose an administration for them copied from the Roman system; but, powerful as he was, he could not decree an art. In order to educate his painters, and teach mathematics to his architects, it was necessary that he should bring professors from Byzantium, Damascus, Cordova, and those other exotic seminaries which the genius of the Eastern peoples had produced. These created an art which was neither Roman nor Oriental, but partook of both, and which was so vigorous that centuries afterwards its ramifications spread until they reached the widely-distant lands of its birth. It has been said, over and over again, that the Crusades had a great influence on Western architecture, but the study of the monuments of the time rather serves to destroy than to confirm this assertion. If the arts and sciences cultivated by the Moors have had a great influence by importing new elements into the architecture of Western Europe, it was rather during the eighth century than at a later period, and we believe that to the reign of Charlemagne may be attributed the introduction of modern art, as distinguished from that of antiquity, into France. To use a figure of speech, the cut and fashion of the garment remained Roman, but the stuff was Oriental. This is particularly remarkable in these parts of the Western Empire in which Charlemagne made long stays. On the borders of the Rhine, in Languedoc, and on the slopes of the Pyrenees, we see this Oriental influence, and the tradition of certain imported forms, foreign to Roman art, enduring even to the thirteenth century.

But although his genius could impress itself on the places brought within its immediate influence, and although in such places we find unity impressed upon architectural endeavours—and this in spite of difference of nationality—yet in those places removed from this influence this did not obtain, and fifty years after his death the different peoples returned to their own ways, and the art of architecture became, like the empire, broken up. Amongst the arts, architecture is certainly that which has the greatest affinity with our instincts, our ideas, our manners, progress, and wants; it is, therefore, difficult to mark the direction it takes, or the results it arrives at, without knowing the tendencies and the genius of the people amongst whom it developes itself. Since the seventeenth century, for example, the *personality* of the French people has been absorbed by the *government*, and in consequence art has become *official*, and, therefore, varying with the politics of the period; but in the twelfth century, in the midst of such a divided condition of society, when the despotism of the great lords produced a species of liberty bordering on licence, this was not so; and though our space will not permit us to show how that the political history and the architectural history of France from the eighth to the twelfth century marched side by side, yet it is difficult to sketch the salient points of their route. The leading idea of the eleventh century was feudality; it imposed itself on the clergy as well as on the laity; and the abbot and the bishop in their monasteries and palaces were as much feudal lords as the castellan in his chateau; and these two divisions marked out the course of architecture. The most notable event of this period is, however, one which we have already commented upon—the foundation of the abbey of Cluny, an establishment which greatly affected the history of architecture in England, for from its walls issued both St. Anselm and Lanfranc, to whose labours English architecture owes its impetus in this century. Its first architect was Gauzon, Abbot of Baume; but it owes its church and its plan to a Liegoise named Hezelon, and the kings of Spain and England vied with each other in contributing to this establishment. Thus its influence, so widely based, spread more widely, and buildings on the Cluniac model spread themselves all over Western Europe. Monasteries, simple parish churches, buildings of rural and civil character, alike were erected from the traditions issuing from this fertile source; for there, and at this time *there* only, could be found well-studied and far-sighted plans, combining dignified appearance with sanitary forethought. Even so early as 1009, before Cluny was developed into its perfection, Hugo de Farfa had sent one of his disciples to study and describe the doings of the community. Here is his rule for planning a monastery according to the Cluniac canon—a canon which forced its observance even into the heart of Italy:—"The church ought to be 140ft. long, with 160 windows. The towers should flank the entrance, forming a parvise (or narthex) for the laics, the domitory should be 140ft. long, 34ft. high, having 92 windows, each 6ft high and 2ft. 6in. wide. The refectory should be 90ft. long and 23ft. high, the almonry 60ft. long, the workshops of the glass-workers, jewellers, and goldsmiths 125ft. long and 25ft. wide, and the stables for the horses of the monastery and strangers 280ft. long and 25ft. wide." We thus see the initial effort of another attempt to produce unity in architecture—an attempt often repeated in the history of art, successful to a certain point, and until the restraint thus imposed became too rigid, too empirical, then art, fearing strangulation, burst its bonds, and becomes again uncurbed and for a time somewhat rampant.

Architecture, thus placed under a theocratic *régime*, not only was restrained from admitting new forms, but was also compelled to reproduce perpetually the old ones, and thus ceased to be progressive, consequently it rebelled, and then emancipated itself from monastic thraldom. Side by side with the clerical schools lay ones grew up, and these last were filled with that spirit of innovation so markedly, the characteristic of modern civilisation, was rationalism found its way into art as into theology, and the independence thus born was the distinctive characteristic of the twelfth century. Schools of architecture particular to certain provinces, began to spring up. No longer did the arts radiate from one centre—their points of radiation were multiplied. Paris formed one great central school, and men of letters, arts, and science from all parts of Europe congregated there, imparting and exchanging there the diversified ideas they brought with them; and the guilds of art of Paris, fostered by this movement, spread their influence far and wide, bringing their science to bear on many phases of localised art. Of this localisation we shall briefly note some characteristics. Take, for instance, the valley of the Rhone and the Saone. We there find erected during the eleventh and twelfth centuries the churches of Thor, Venasques, Pernes, the porch of Notre Dame des Dons, Avignon, S. Trophime at Arles, and S. Gilles, all more or less partaking of Roman character—modified, it is true, by more modern requirements. Roman buildings remained there almost intact, and the soil was covered with the fragments of those which had been destroyed. As the commercial relationship of the towns thus placed in reach of easy commerce with the East was more or less intimate, we find the Byzantine influence manifesting itself in a greater or less degree. Polygonal apses and cupolas, blank arcades in low relief, shallow mouldings, and strange ornaments, all indicate an Orientalism of sentiment. From the Rhenish provinces came also the reflex of that older Orientalism imported by Charlemagne, and these two influences, meeting in the region of the higher Saone, in Burgundy and Champagne, produced a well-marked and distinct school of architecture. Another notable instance of imported Orientalism, and the vitality which existed in it, is presented in the abbatical church of S. Tront at Perigueux, founded in 984, and which reproduces exactly, in its plan and disposition, the then newly-built church of S. Mark at Venice. It is probable that this was designed by a Venetian architect, for at this time Venetian colonies had become important communities at Limoges and in the surrounding district, founding there that manufacture of enamels which existed until this branch of ornamental art fell into decay in the fifteenth century. This building, which was completely dissimilar to any which had preceded it in this part of Europe, exercised a great influence on the constructions of the eleventh and twelfth centuries in the central districts of France, and may be considered as the mother church of all those cupola-crowned churches which stud the country from the Rhone to the western shore of France. Aquitaine and Auvergne, Poictiers, Angers, and Le Mans—in fact, nearly one fourth of France—submitted to the influence of this school, and it is by no means impossible that this (as is suggested by M. Verneilh) was chiefly owing to the pirates of the Mediterranean. The highway of the sea, choked by the Straits of Gibraltar, was dangerous; the highway to the outer world through France was safe, and the rich spices and stuffs of the Levant, the gems and ivory of India and Africa, found their safest road to England and North-Western Europe across Provence, leaving on their road a permanent track marked out by Eastern tradition in architecture. It is, indeed, more than probable that the rich Eastern merchants, who found in France a safe home and a lucrative commerce, thought fondly of the structures—especially the religious ones—of their distant birthland. It is the custom of all colonists thus to do. We English see this same thing daily developing itself in India, China, Australia, and America. The arts, the tenderest expression of human thought, were then as today: imported from home. Home thoughts have sanctified certain forms, and human nature is the same yesterday, to-day, and for ever. The rich Venetians, the Eastern merchants and travellers of those distant days, would thus undoubtedly send to their native country for designs, or dispatch thither monks and laymen imbued with the love of architecture to study the churches of Venice and the Adriatic. The ideas thus collected would be interpreted according to the intelligence of the interpreter, and a certain admixture of national and individual feeling would, by this means, be given to their works. Thus, the architecture of this district becomes a combination of two sentiments expressive both of the tradition whence the idea generated, and the requirements of the people for whom it served. It was healthy, and therefore it lived, and down to the thirteenth century the cathedrals of Poictiers, Angers, and even Le Mans, preserve, in the construction of the vaulting of their large naves, the last trace of the cupola.

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THE BLOCK AT THE WEST-END.

A LETTER under the above title published in the *Times* of last Friday, with the signature " C. E. T.," deserves serious consideration. We cannot agree with the author in his depreciation of the Horse Guards' building, nor do we think it is shared by the architectural profession. It is usually acknowledged to be picturesque in its masses and outline, and bold and simple in its detail, and in our opinion it is in these points infinitely superior to its monster neighbour—the Foreign Office. We would, however, with its critic, advocate the carrying the cordon of Parks down to the river's edge, and thus, as Mr. Beresford Hope pointed out long since ought to be done, complete the beautiful range of Park scenery which intersects London. But we would leave the Horse Guards' buildings intact, (excepting its sentry-boxes), with its archways, giving a vista of the extended Park and river beyond, preserved as a passage-way for pedestrians. We would clear away the buildings which adjoin it on both sides—viz., the Paymaster's Office and Lady Dover's mansion; and on the other side of Parliament-street we would open a space from Whitehall-place to the left, up to the Duke of Buccleuch's mansion on the right, with perhaps the block of Inigo Jones's Whitehall Palace left alone standing in the midst. It is questionable, and simply a question of expense, whether it would not be well to remove even that building, with perhaps Dover House, Lord Clarendon's, and Gwydyr House to the new frontages that would have to be formed, as, though all worth retention, they were not designed for, and therefore, are not suited to, isolated positions. The improvement thus suggested would be so great, and could be attained now at so moderate a cost, that the subject ought to be well discussed, and not allowed to drop.

The addition to the Park thus gained for the public would far more than compensate for what they might be supposed to lose, except in point of convenience for carriage traffic, by the roadways through the park which have been proposed to be made, and which seem to be most desirable.

The three parks, Hyde Park, the Green, and St. James's Parks, should then be placed under the same regulations as to the time of their being closed, if closed at all. This would be another boon to the public, to whom the present varied and complicated régime is most vexatious, and the new roadways would give access at all times, as is so much needed, to the St. James's-Park Station upon the Metropolitan Railway, from Regent-street and Pall-mall direct, without having to go half a mile round as at present.

Another suggestion made by " C. E. T." is worth consideration—namely, the removal of the barracks next Birdcage-walk, and the occupying of the site by first-class detached mansions facing St. James's Park. This would take away the present melancholy isolation of Buckingham Palace, vastly improve the neighbourhood, and set a fashion for the domestic architecture of the richer classes, which might wean them from the cheek-by-jowl crowding of incongruous houses, like those in Park-lane facing Hyde-park, and the barely respectable monotony of the squares in Belgravia.

It is grievously to be regretted that a great opportunity was thrown away by the Metropolitan Board of Works for making a good approach from Birdcage-walk to St. James's Park station. This was, we learn, offered to and rejected by them before " the stately pile " of mansions referred to by " C. E. T." was erected at the corner of Queen-square, Westminster. Though late, it is not too late, however, in so large a scheme of improvements, to consider whether this might not be remedied by the rebuilding the block in question; and if not an admirable road might be formed by the extension of Tothill-street and the Broadway into Birdcage-walk, round the said block through gardens and property of no great value, and thence, with a gentle curve, through St. James's Park, and over a new bridge, through Marlborough-gate to Pall-mall and St. James's-street. York-street, also, should be widened as much as Tothill-street has been. On the whole, we incline to think that such a road as we have suggested above would be preferable to the entrance from Birdcage-walk opposite the station, and by the side of the aforesaid mansions.

JOHN P. SEDDON.

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ON ENTASIS; ITS USE AND MISAPPLICATION.*

(*Concluded from Page* 234.)

THE monumental pillar, the lighthouse, the tall chimney, the obelisk have one thing in common, and it is this: they are only subjected to lateral pressure. They have to resist no downward weight, no crushing force, but they may be blown over in consequence of insufficiency of taper or width of base. The outline which such a class of works ought therefore to assume appears to me to be some variety of the inverted parabolic curve, the hollow in this case, in place of weakness, being remarkably expressive of elegance and strength.

I come now to speak of the application of the entasis, that peculiar curve denoting strain or effort, to the spire. I am not aware of anything that has been written treating of this subject; but I may venture to say that if this peculiar curve is employed here at all it is employed in a sense and for a purpose very different to that in which or for which it was used by the architect of the Parthenon. There, it was the refined expression of supporting power; here, it is to accomplish the more pleasing junction of two opposing lines—the vertical and the oblique. Now, it would be very well in order to prevent confusion of ideas that some new term were invented to denote this very different purpose. The English word "camber" rather recommends itself to my mind as both more suitable and expressive. However, in defence to the spirit of the age, I will, in further observations I have to make continue to use the old Greek word, but in its vulgar acceptation.

Some architects consider that every spire should have an entasis, as something indispensable to its beauty. I have hitherto failed to perceive the force of this myself, either in ancient or modern works, and I think it will be found that a good design is in no instance indebted to entasis for its excellence. On the broach spire alone is it admissible; in all others it is a defect, and in some other cases where its presence even is suggested you will find counteracting means adopted to destroy or neutralise it. The spire was no more than the pyramidal roof or capping over the Norman bell-tower, and it gradually assumed loftier proportions as the style changed from the round arch of the Normans to the pointed one of the Early English. Its Transitional shape was probably where it rises square from the tower, and is speedily brought into the octagon by short bevels from the four angles of the base. This form is usually adopted in wooden spires, and was often repeated in stone down to the Decorated period. It is to be seen in the fine old spire at Bebington. Contemporaneous, or immediately following this form, appeared the broach spire, the term "broach" being applied to the four angular portions of a pyramidal capping that would be exposed, were an octagon spire let down over it. The great majority of spires of the Early English, Geometrical, and Decorated periods are based on this form. In the early examples the eight angles of the spire came right down to the base, or where it joins the tower, and the broach, when of lofty proportions, unites the tower with the spire in a pleasing manner. Immense variety of character is produced by varying the proportions by the introduction of pinnacles upon the ridge of the broach, sometimes at its base, higher up, or at its summit, and by the use of spire lights. In many instances the pinnacles are the upward extension of the tower buttresses, and sometimes are connected by flying buttresses to the spire, or with other higher pinnacles at its root. The least satisfactory variety of spire is that most commonly found in Late Decorated and Perpendicular, when the naked spire rises abruptly from behind a parapet with or without pinnacles at the angles, and when every reminiscence of the broach has disappeared.

I will now bring before you all the instances of the application of entasis which I have been able to discover after a careful reference to all the old examples within my reach. The first example is that of St. Margaret's, Crick, with three tiers of spire-lights on alternate sides and a two-light window in the plain belfry-story. This has an entasis. And, upon the same grounds that I say a thing of beauty is not a joy for ever when it is reproduced over and over again, and novelty, even if of inferior beauty, is sometimes more pleasing because of its novelty, then, in spires of this kind, entasis may be used as a variety, but, as a rule, it is not an improvement.

In the letter-press to that splendid collection of spires by Mr. Charles Wicks I find no allusion made to entasis, and, with the exception of that at Crick, no other examples given than one on plate 20, vol. ii.; three on plate 11, vol. iii.; and one on plate 23, vol. i. The one on plate 20 is that of St. Nicholas, Walcot, Lincolnshire: a broach spire, crocketed with three tiers of crocketed gable spirelights on alternate sides. The swell is toward the upper part.

In juxtaposition upon the same page, as if to challenge comparison, is represented St. Mary's, Ketton, Rutlandshire, of precisely similar features and proportions, but without entasis. The lines are clean and straight, and its superiority over the other is unmistakable. The spire of Ketton, by the way, has no crockets on the angles.

Perhaps the most hideous example in the book is that of St. Vincent's, Gaythorpe, Lincolnshire, on plate 11: a crocketed spire without gable spirelights, rising from behind the perforated parapet of the tower, and connected to the angle pinnacles by flying buttresses. It is very tall, and has a terrific swell towards the summit.

Only less ugly is that of St. Helen's, Broughton, in the same county (Lincolnshire), and on the same page, somewhat similar in design, but the entasis is less marked.

The third example is All Saints', Leighton Buzzard, Bedfordshire: plain broach spire, with angle pinnacles and spirelights. Here also the entasis detracts from its effect.

The sixth example is that of St. Bartholomew, Lostwithiel, on plate 23, vol. i., consisting of a plain octagon spire, set upon an octagon stage or lantern, filled in on each of the eight faces with a Decorated two-light window, and finished with gables. The spire lines have a regular entasis the whole length. The only result is a stiffness and rigidity of the outline, which had much better been absent.

Of the eighty-four examples comprised in this magnificent collection, there are only six represented with entasis, and none of these, I am sure, are sufficiently successful to encourage imitation.

My next reference is to the well-known example of St. Andrew's, Ewerby, from Bowman and Crowther's work, according to whom there is a swell in the spire greatest at about one-third from the top. It is a most effective design, but I question that it derives any of its excellence from this feature; rather does it arise from the elegant proportions which pervade it throughout, its massive and substantial character, and the delicacy and finish of its mouldings and details.

In St. Peter's, Threckingham, we have a broach spire, in which the lines of the broach are very much curved, but those of the spire straight. When you get the diagonal view, as in the perspective, the effect of this is far from being good. There is a class of spires furnishing many excellent examples in which the spire proper is set upon an octagon. This octagon, according to its treatment, may be made to appear more or less the upper story of the tower. Still, even when finished with plain or open parapet, its being octagon on plan, like the spire, and vertical, the angle lines produce at once the impression of entasis. Witness the unpleasing effect of this in St. Lawrence's, Stanwich, Northamptonshire, where the octagon continues down to the ground. But this result is counteracted in most instances by uniting the octagon to the square tower by means of high or low broach, with the addition of buttress niches or pinnacles. A very original and peculiar example of this is to be seen in St. Mary's, Bloxham. Though imperfect in many respects, this steeple altogether contains the germ of a large amount of architectural character. A very different but most beautiful example of this class is given in St. Peter and Paul, Exton, where both octagon and tower are finished with battlemented parapet, the former having large octagon turrets, also battlemented, but without pinnacles set upon the broach at the angles. The union between tower, octagon, and spire is most beautiful and complete, the outline, the filling-in and arrangement of windows, spire-lights, &c., and the light and shade, all helping each other.

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* Read before the Liverpool Architectural Society, March 8, 1871, by Mr. JAMES M. HAY.

In St. Mary's, Wilby, Northamptonshire, on the other hand, the swelling and bulging effect of the octagon is not sufficiently carried off by the too slender pinnacles and flying buttresses at the angles of the tower. Mr. Freeman rather disapproves of this class of spires from their "suggesting the idea of the lower part of the spire having been shaved down vertically"—in other words, suggesting the bulging effect of entasis. But their advantage appears to me to consist in the opportunity it affords of introducing a massive or clustered pinnacle closely attached to the spire, which, in skilful hands, is capable of a great variety of treatment.

Another effective method of forming the junction between tower and spire is that represented by the spires of Salisbury and St. Mary's, Oxford, where the massive or clustered angle pinnacles are supplemented by others higher up, and set between these and the alternate sides of the spire, completely filling up the gap, and producing a rich and gorgeous effect.

Similar objections would hold good against the application of entasis to spires which rise at once from within the plain, perforated, or embattled parapets of square towers, whether furnished with angle pinnacles or not. The junction in these cases is marked and decided, and the diagonal view is very seldom good; but much may be done, even here, by flying buttresses and large pinnacles, or by a skilful treatment of the belfry story. Or when this is not attempted, when the abruptness of the junction is left unchanged, a similar squareness of effect may be re-echoed in lesser degree in other parts of the church to which the spire is attached, and thereby unity of design attained. But this is rather travelling into the principles of general design, which I must avoid. With the exception of the few instances I have given, none of the other spires that I am acquainted with have any entasis; their lines are straight as an arrow; and I am convinced that any departure therefrom, after they have fairly cleared the base, would seriously mar the beauty of the whole.

Turning to modern examples, I am acquainted with none where entasis has been successfully applied. It is not to be found in any of the late Welby Pugin's works, nor is it alluded to in his writings. The broach spire was rather a favourite model of his, and that of the little Catholic church at Old Swan is even yet one of the finest spires in Liverpool or its neighbourhood, charming alike in its simplicity and elegant proportions. That of St. Giles's, Cheadle, is another, but richer and fuller of detail and depth of effect. His lines are all straight and decided. But instead of this swelling outline being a desirable thing in a spire, we have numerous beautiful examples in which the outline is a decided hollow. See St. Nicholas, Cottesmore, broach; St. Mary Magdalene's, Warboys, broach; St. Mary Magdalene's, Newark, broach, with angle pinnacles; St. Maclou, at Rouen, &c. &c.

In drawing these observations to a conclusion, I would guard myself from any desire to limit or confine the inventive genius of the architect, and if I have spoken with some confidence as to the result of my own experience and studies, I am not vain enough to suppose but that some ingenious artist may arise more lucky than the rest, and produce a design like Gainsborough's celebrated "Blue Boy" upsetting all my theories, and at the same time throwing the best ancient examples into the shade. If such should be the result of this paper, it will afford me some consolation that, as the saying is, my labour has not been in vain. I began by alluding to the Parthenon, the most perfect embodiment of Classic art the world has ever witnessed, the typical idea of which was weight adequately supported. There, entasis had a place and a purpose. I proceeded to refer to numerous examples of Christian art—an art in which the typical idea was that of weight annihilated, and among others cited the cathedral of Salisbury, whose steeple from floor to finial measured over 400 feet. How graceful, how rich, and yet how simple in outline, and how worthily it occupies its place as prime feature in an architectural composition which, as seen from the north east, for grand picturesque effect is unsurpassed by any other in England!

In the Gothic cathedral there is no entasis, no effort, no strain, and the uncounteracted suggestion of its presence is antagonistic to the genius and spirit of the style. The clustered pillars do not bulge and swell like the dropsical columns of the Roman and Florentine schools—themselves the caricatures of those at Athens. They shoot up to a height of sometimes fifty or a hundred feet without swell or diminution, and without producing the faintest impression of weakness or instability. Unimpeded by the slight cap mould, they spring into the arch and ramify over the vaulted ceiling in a thousand beautiful curves and fine-drawn lines, then are lost in the dim infinity of height and distance, and the ponderous bosses are as lightly carried by the fairy fingers of the groin-ribs as if they were made of gossamer. The capital, conscious that it carries no burden, bursts into foliage, and ripens into rich clusters of fruit and flowers. There is the spring of perpetual growth in every form and detail of this glorious style; in the window, the shaft and the arch; in buttress, pinnacle, and spirelet; in moulding, flower, and crocket. To exhibit any swell or roundness in the spire is to acknowledge a flagging of this upward growth—to admit that it begins to feel the effects of resisting power—to proclaim at last that weight is no longer annihilated. But it is not so: the old and decrepit, under the weight of years and sorrow, bend into a circle; the young are straight and free.

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THE NEW WEST LONDON SYNAGOGUE.

JUST as the City churches have become deserted by the wealthier class of people, and new churches are being built in the Western districts, to accommodate the Western movement of the worshippers, so with the Jewish community—the older synagogues in the City are comparatively unoccupied, and many new ones have within the last few years been built in the suburbs. A short time since we chronicled the opening of a synagogue to hold a thousand people in Great Portland-street, and we now have to record the consecration of a building of similar size and great architectural pretensions which has just been completed in Upper Berkeley-street, close to the corner of the Edgware-road. Among Jews, as among their Christian fellow-citizens, what is called orthodoxy is not universal; and this new building is to be occupied by what we may term a body of Jewish Dissenters, differing from their co-religionists truly in matters of small moment, but still of sufficient importance to cause the Chief Rabbi, Dr. Adler, and all the orthodox Jewish ministers, to consider it to be their duty to absent themselves from the ceremony of consecration.

The founders of this congregation of Jewish Dissenters, by whom this building has been erected, left the orthodox Jewish body some thirty years ago, through just such a communal quarrel as caused old Isaac Disraeli to leave the religion of his fathers. Starting with a small room in Burton-street, their numbers increased, until about twenty years ago they built for themselves a small synagogue in Margaret-street, and since then the further increase of their congregation has made the erection of the building in Upper Berkeley-street a matter of necessity.

This building, though monumental in character, is erected on leasehold land belonging to the Portman estate, and held by the trustees for a term of ninety-nine years only. The main portion of the building occupies back land, and the exterior is consequently unseen from the surrounding streets, but the stone entrance front in Upper Berkeley-street forms a fitting entrance to an important building.

As long ago as January, 1867, a building committee was formed to collect funds, and one of their first steps was to invite a limited number of architects to submit competitive designs for the intended building, and to ask Mr. P. C. Hardwick, the eminent architect, to assist them in their selection of a design. This resulted in the choice of the design of Messrs. Davis and Emmanuel, of 2, Finsbury-circus, and which has since been carried out by them.

The building recently consecrated is a domical structure, Byzantine in character, and a square on plan, measuring seventy feet each way, and with a wide gallery along two sides and western end; the ceiling consisting of a large central dome, and four small domes in the angles, and four great arches covering the side spaces. This ceiling is carried by four piers of clustered columns of Devonshire marble with carved capitals.

At the east end of the building is a domed semicircular recess, or apse, in which is placed the organ and choir, and in the centre of this apse is placed the ark or shrine, which is the receptacle for the scrolls of parchment containing the words of the Mosaic Law, and is constructed entirely of inlaid marble work.

A peculiar feature in this building is the placing of the choir at the east end of the building, facing the congregation, and concealing them from the view of the congregation by a screen of marble containing openwork grilles of gilded metal, the arrangements of this portion of the building reminding one strongly of the new Greek Church at Paris. The stone and marble reading-desk also, which occupies the centre of the floor, resembles the "ambon" in the older Greek churches. The organ is placed in the apse at the east end, and behind the ark or shrine; certainly the very best position in which an organ can be placed in a musical point of view.

Some of the arrangemements of this building deserve special consideration at the hands of those who have the planning of our public churches and edifices. A gangway is reserved all along the side walls of the building, so that persons coming in after service has begun may reach their seats without disturbing the mass of the congregation. All the doors through which the public have to pass swing outwards as well as inwards, and are arranged for the egress of a crowd on much the same principle as an engineer would lay out a system of water-pipes, viz.:—the occupants of the ground floor, 500 in number, pass out through two five feet wide doorways into a corridor 10 ft. wide, and similar means of egress is given to the 500 occupants of the galleries. Where the occupants of the galleries and ground floor meet, the hall or atrium is 20 feet wide, and the opening of the great arch and gates in Upper Berkeley-street is of this width. There is thus a total prevention of a "block" in the outgoing crowd.

From the Oriental custom which exists in synagogues of separating the men of the congregation from the women, and placing the latter in the gallery, it becomes a special matter of difficulty to so arrange a building as to give equal gallery accommodation to that on the ground floor, and in order to give a place of meeting for the male and female members of the same family after the service, a spacious hall or atrium becomes a necessity of the case, and consequently a feature of the plan.

The decoration also is somewhat peculiar. The highest class of decorative art—viz., subject painting or figure sculpture, is necessarily absent, the Jews, so far as their religious buildings are concerned, reading literally the Second Commandment. In this building the decoration of the flat surfaces depends entirely on the varied combinations of simple geometrical forms, picked out with colour, and on the leaves and flowers introduced in the carving; and here the lily, the pomegranite, olive, fig, and palm, are the types which are conventionalized.

One thing may certainly be claimed for this building: the principle of truth in construction, of which Mr. Ruskin is the apostle, has been nowhere violated. There is none of the sham marble work, sham stonework, and imitation oak graining, which combined to make up the decorative materials of the architects of twenty years ago. The artificial lighting of the building is managed by five sunlights in the centre of the domes, by starlights and by suspended globe lamps under the galleries.

The part upper of the entrance building in Upper Berkeley-street is arranged to form a committee-room and residence for beadle.

Many special objects in the building have been presented to the Synagogue by the wealthier members of the congregation. The ark itself is the gift of the ladies of the Goldsmid family. The pulpit and marble pavement were presented by Mr. D. C. Stiebel; the reading desk by the Henriques family, in memory of the late Mr. D. Q. Henriques, who shortly before his death presented the two stained-glass windows for the east-end wall. The Commandment tablets on either side of the apse arch are executed in gold mosaic by Salviati and Co., and are the gift of Mr. Dresden, and the Perpetual Lamp, which hangs before the ark, was given by Mr. Jacob Mocatta, and the entrance gates are the gift of Mr. Simon Waley.

The building has been erected from the designs of Messrs. Davis and Emanuel, architects, by Messrs. George Myers and Sons, builders, of Lambeth. The marble work of ark and choir screen, reading desk and pulpit are by Messrs. Poole and Sons, the Westminster Abbey masons. The pitch-pine seating is by Mr. W. H. Lascelles; the gas fittings by Messrs. D. Hulett and Co.; the main portion of the stone carving is by Mr. Williamson; the system of hot-water-pipe heating and ventilation has been carried out by Mr. W. W. Phipson, C.E.; and the stained-glass windows are the production of Mr. A. F. Usher. The organ has been built by Messrs. Gray and Davison, at a cost of £1,200, and the total cost of the building will be about £20,000.

We give this week a double-page Illustration of the interior of the new Synagogue.

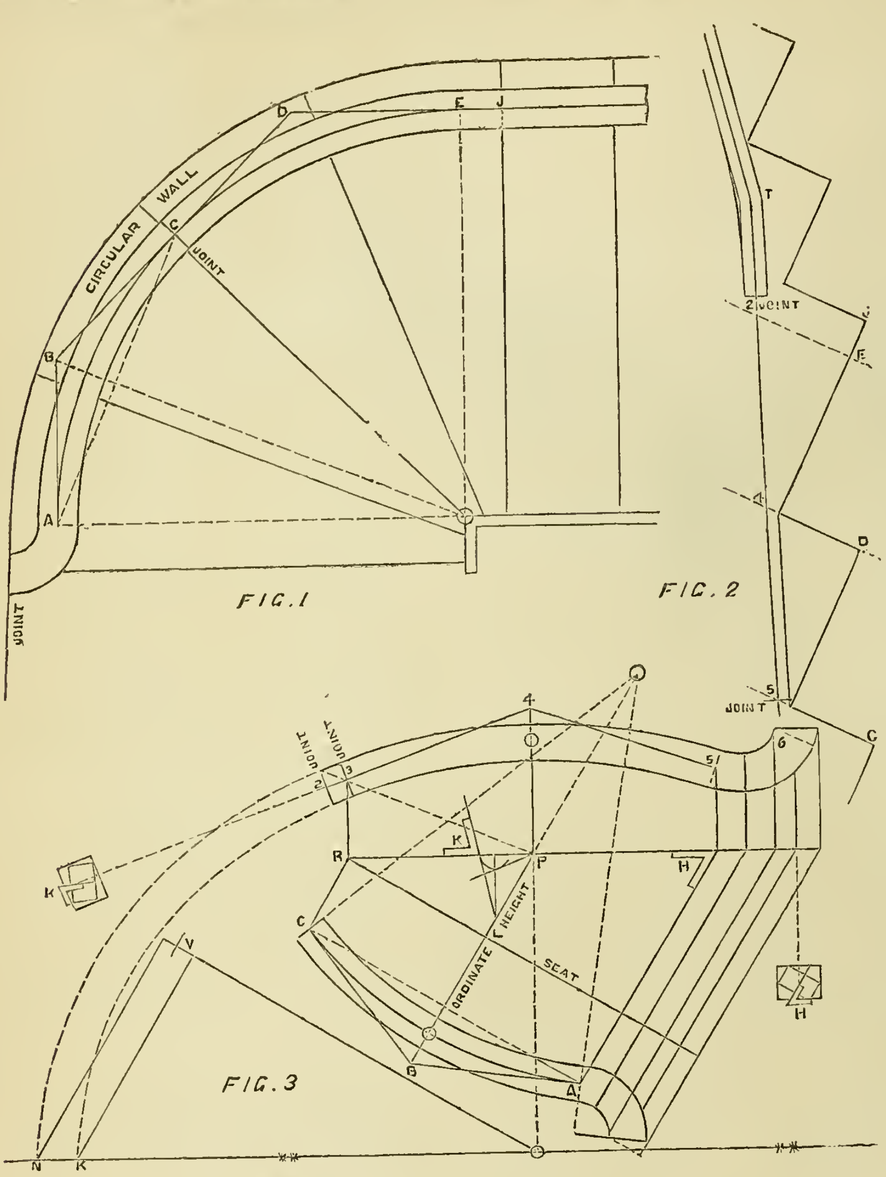
SCIENCE IN ARCHITECTURE.

By an Experienced Workman.

A PAPER was recently read on this subject by Mr. W. Parslow at the Liverpool Architectural Association, and reprinted in the Building News, and on which we have to offer a few remarks. We are led to make these remarks not from any desire to cavil or find fault unnecessarily, but simply to correct one or two mistakes into which the writer of the above paper has been led, and which our practical experience tells us are such as the workman himself would perceive and condemn at once. We regret this the more in that such papers, when carefully prepared as to facts, are invaluable, and have great influence. In the concluding portion (contained in the Building News of March 3rd) the writer states, in the section on painting, "With regard to the numerous anti-corrosive paints, it is no use trying to cheat Nature; anti-corrosive paints will not answer the purpose their name implies. All that can be done to obtain the objects of such paints is to pick and form the stuff so as to reduce the power of the elements to affect it to a minimum. This is best secured when the composition forming the paint is granular, not so finely powdered as ordinarily. The finer the powder of the mixture, the greater the tendency for air-holes to form as the paint is being laid on. Paint that is gritty or granular affords a better opportunity for the air to escape." We must take exception to the above statement, as being contrary to our experience, for we have invariably found that the finer the paint is ground, the less liable it is to blister or become pinholy, and the more impervious it is to the effects of the atmosphere. The protecting powers of all paints are in a great measure, if not entirely, due to the oil with which they are mixed. Mr. Parslow himself seems to be impressed with this fact, for he says the coating of oil is the best preservatvei, and not the paint. How he reconciles this fact with the assertion that coarsely ground pigments mixed with oil are the best we cannot conceive, for it will be evident that the particles of grit or gritty paint will be much more likely to be affected injuriously and much earlier than the fine-ground paint, simply because they (the coarse particles) have not, and cannot have, the same protection from the oil that the other has; consequently these unground particles are destroyed, and the air thus gets easy access to the wood or iron. That this is the fact an experience of nigh upon forty years fully confirms. The primary object in view in painting the outside of wood or iron work is to exclude the air, or prevent its direct action upon the surface of the article painted. We have not yet had experience of any mixture or method which will effect this desirable object permanently. The next best thing, of course, is to use such preservatives as will protect the object for the longest time. This is best done by using some substance which shall form a perfectly homogenous and impervious surface. This is being attempted to be done by a number of patent paint mixtures, most of them being mixed and made with or from petroleum oil and varnishes, having for their principal feature a most abominable smell, and a faculty for drying quick, the latter quality being put forward by the patentees as a valuable recommendation, when in fact it is, as all practical men know, the strongest proof of the utter worthlessness of such mixtures. Their quick drying is produced either by bad gums mixed with inferior spirits, or by petroleum oils, lime, copperas, and other forcing driers. When laid on the work the spirit quickly evaporates, leaving the paint dry and hard, but without any cohesive power but that of the gum or resin, which is in its nature dry and brittle. Time and the atmosphere quickly reduces the mixture to a dry hard mass, which either cracks all over in millions of minute cracks, and this exposes the surface of the work, or it crumbles away in powder. Our experience points to the fact that there is no protection for iron work so efficacious as well-boiled linseed oil, properly laid on. The iron should first be well cleaned and freed from all rust and dirt; the oil should be of the best quality, and well boiled, without litharge or any drier being added. The iron should be painted over with this, but the oil must be laid on as bare as possible, and on this fact depends in a great measure the success of the application, for if there be too thick a coat of oil put upon the work it will skin over, be liable to blister, and scarcely ever get hard; but if iron is painted with three coats of oil, and only so much put on each coat as can be made to cover it by hard brushing, we will guarantee that the same will preserve the iron from the atmosphere for a much longer time than any other process of painting. If a dark colouring matter is necessary, we prefer burnt umber to any other pigment as a stain; it is a good hard drier, and has many other good properties, and mixes well with the oil without injuring it. "Woodwork," Mr. Parslow says, "before painting should be well soaked with good priming, principally turpentine. This keeps damp out of the wood; a coat of paint has not the same power." We are at a loss to understand what Mr. Parslow means. We have always understood priming to be the first coat given to wood (as its name implies), whether mixed with turps or oil, and is in fact a paint in every sense of the word; and when he says "principally turpentine" we feel assured that he has never mixed any priming, nor used it (although, of course, that does not prevent his knowing how it should be done). If he had, he would have known that if the priming and colour were mixed with turpentine, the turps will evaporate and leave the lead upon the surface of the wood without any adhesive power of its own, and it would dust off with the duster, or wipe off with a rag. The turpentine might sink into the wood, but it would soon leave it again by its power of evaporation; a thoroughly practical painter would never dream of adding turps to priming, and he would be committing an act of folly by doing so. The best priming colour is made with pure raw linseed oil, with just a sufficient quantity of best white lead added to make a thin paint; Venetian red, or burnt umber, may be added to give a little colour. This mixture will penetrate the wood to a much greater depth than turpentine colour, and, as we have before said, in reference to iron, the oil is the principal preserving power; as soon as that is destroyed, either by the action of foul air or by direct chemical means, such as lime and soda, the lead or other pigment becomes mere mud, and has no protecting power whatever. That this is so every-day experience teaches us. Again, the writer says the coat of paint forms a skin over the wood, instead of soaking into it. Now if the workman puts on too much paint of any kind on the work at one painting it will assuredly skin over, but we have never yet seen primed work skin over when properly painted by good workmen; but when priming is done (as much of it is done in builders' shops) by labourers we should not be surprised at the paint skinning over, but not otherwise. White pine and red deal and pitch pine have each a different degree of power of absorption, on account of the difference in the quantity of resin each contains. If we lay the same quantity of paint on the pitch pine as we may with safety put upon the deal, the former would be all covered with skin, and the work would be completely spoiled. We cannot expect bricklayers' and joiners' labourers to discriminate, and thus erroneous judgments are formed from very unreliable facts. One other point we have to notice in Mr. Parslow's remarks, and we shall have done finding fault with what is otherwise an admirable paper. Speaking of varnishes, he says: "For ordinary purposes, where we usually specify common oak varnish, copal varnish diluted with oil answers better, and in practice is often adopted." Now we utterly dissent from this teaching. In the first place it is rarely if ever used in practice, except when a contractor engages to use a certain quantity of varnish, and instead of doing so dilutes it with boiled oil, and thus cheats his employers and makes a dishonest profit. There is unfortunately too much of this done. In the second place every practical man who has had any experience in the use of varnishes knows that oil in any quantity added to copal varnish impoverishes the varnish, and causes it to be and to remain tacky or sticky, not only for a time, but always. As a matter of course, we all know that a drop of boiled oil, termed drying oil by artists, will prevent mastic varnish from cracking; or a few drops added with turpentine to varnish which has become fat will materially improve it, but to add oil to copal in sufficient quantity to compete in price with common oak varnish would utterly ruin the copal. A teaspoonful of boiled oil to a pint of varnish is all that can be put in with safety, but in any case it is a most dangerous practice to mix oil with varnish; some varnishes it will stop entirely from drying; others, although they may dry, will always soften and stick when the heat of the body comes in contact with it, and we have seen splinters six inches long torn up from seats by parties sitting upon them after being varnished with varnish in which oil has been mixed. Knowing these to be facts, we would venture to say to all users of varnish who have any regard for the character of their work or their own credit, Don't add oil to copal varnish. If a really cheap and good varnish is required for roof timbers in churches, or outside woodwork in exposed situations, we would recommend the following, which we have used with advantage:—To one gallon of the best boiled oil add one pint of the very best liquid driers (Terebini); mix well together. This mixture has a good gloss and very great preserving properties, much superior in every respect to most of the low priced varnishes. We have also the advantage of knowing what we really are using, an advantage not to be despised in these days of horribly smelling compounds which are dignified by the name of varnish.

A Colonial Museum.—The subject of a Colonial Museum is now under practical agitation. On Monday, on the motion of Lord Bury, M.P., the Royal Colonial Institute unanimously appointed a committee for carrying into effect the propositions of Mr. Hyde Clarke's paper for a Reporter on Trade Products at the Colonial Office, and for a Colonial Museum.

The Scaliger Tombs at Verona.—These tombs have a special interest at present, as being reported to have afforded suggestions for the two most important memorial structures at present in course of execution in this country—the Wellington Monument in St. Paul's, and the Prince Consort Memorial in Hyde-park. An engraving of them is to be found in Gally Knight's "Ecclesiastical Architecture of Italy," to which is appended the following description:—"The three celebrated tombs of the Scaligers stand in the old cemetery of Santa Maria Antica, which had been the family burial-place of the Scaligers before they rose to power. The tombs were erected to the memory of Cangrande I., Martino II., and Consignorio. The tombs are all on the same plan, though of different dimensions and different degres of magnificence. In each, the defunct prince appears reposing on an altar tomb, which is supported by pillars and surmounted by a canopy, on the summit of which is seen the equestrian statue of the same individual in the semblance of life, and arrayed in knightly armour. The style of all these tombs is a mixture of the Pointed and the Romanesque. The tomb of Consignorio, which he built for himself, is much the largest, the highest, and the most magnificent, and is ornamented with numerous tabernacles, statues, and bas-reliefs. An inscription on the frieze records that the Milanese artist, Bononius de Campiliano, was the sculptor; and the execution of the work affords a proof that, in Italy, the arts had arrived to a considerable degree of excellence in the fourteenth century. All the tombs are in white marble, and combining together as they do, form a most splendid and picturesque architectural group."



NEW ELEMENTS OF HAND-RAILING.—PLATE XXVIII.

NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 244.)

Plate 28.—Construction of Side-rail Projecting from Circular Wall Resting on Iron Brackets.

Figure 1 shows stairs starting with four winders. Let rail project two inches from wall.

Set off half its width. Divide A E in two equal parts. Then mark joint C.

Next, draw tangents, A, B, C, D, E. See that these are of equal lengths.

Let C, D, E be unfolded, as shown at Fig. 2. The letters along margin correspond with those on plan.

Set off two square steps. Have riser J stand in same position as that on plan.

Let under side of rail rest on square step, also on corner of tangents opposite C and D. Set on half its thickness and form the ramp. The pitch over winders, and that on square steps, intersect at T, which shows that tangents on the mould must be equal, and its ordinate a right angle to chord A C on plan.

Fig. 3 shows construction of mould. Let tangents A, B, C equal those on plan. Draw line A C. Make ordinate square with it. Have seat parallel with A C. Let height L P equal one riser. Join R P extended; this being the pitch. It also gives direction to draw the mould; which may be done by ordinate, as shown for small curve.

Or, it may be struck with a string, if the latter method is adopted. Then the major axis is found by making P 4 equal L B, and square with P R. Extend line from P, and let 4 O equal O B. Then draw through O parallel with pitch R P.

To find the length of elliptic curves:

Draw from O parallel with seat. Let O V equal O O. Set off on each side of V half width of rail. Then square down, cutting at K and N. Next, find points on major axis to insert pins. This done, lay a piece of board on and strike mould.

Tangents 3, 4, 5, and small curve, give the mould for lower piece of wreath, while 2, 4, 5 is that for upper piece.

Have line through 5 marked on under side. Now slit mould through half its thickness, thus making two.

Cut off at 5, and square with 5.4. Let joint 2 be square with 2.4. This completes the mould for upper piece of wreath.

Bevel K applies to all the joints, except that on small circle; its joint being the dotted line from 6 parallel with 5.4. It will be best, however, for application, to draw from 6 parallel with R P. Then the bevel H applies to edge of plank, and directs application of mould. Let the slabs be taken off both sides before cutting off the dotted line. It being the joint against the plastering.

Drive a plug and fasten with a hand-rail screw. This is much neater than breaking the plastering and wedging the rail.

The situation of square step on plan happens to be right to make the pitch a straight line over the winders. But, in case the step is not in the right position, then make upper piece of wreath have two different pitches, to suit the ramp.

* * *

Improvement at Stepney Green.—The Metropolitan Board of Works have informed the Mile End Vestry that they will defray the whole cost of converting the waste land contiguous to Stepney Green into a recreation ground. The outlay for railing-in, levelling, and planting the land in question will be £3,000.

SOCIETY OF BIBLICAL ARCHÆOLOGY.

Last week a new society was formed to carry out investigations of great interest. The ancient histories and monuments with which the Bible is associated have links with the tone of human thought which are of a nature to give to the deciphering of their records very popular results. The inaugural meeting was held on Tuesday week under very favourable auspices, and the society already musters a very good foundation of members. There was a large attendance; the Master of the Charter House, Professor Goldstucker, Professor Donaldson, Captain Wilson, Mr. George Wallis, Dr. Zerffi, Mr. Rassam, and many other eminent men being present. The chair was taken by Dr. Birch, who, after the reading of various letters of approval of the objects of the society from Mr. Goss, Mr. Edwin Harris, Mr. Renouf, Mr. MacGregor, &c., delivered a very spirited and pointed opening address. He said that the necessity had arisen from the extensive labours of scholars for the formation of such a society, in order to bring together the results of researches and to diffuse a knowledge of them amongst the public. He alluded to the relations between the monumental history of Egypt and Assyria and the Jewish nation, the discoveries of the Jews on the monuments of the former, and in the contemporaneous annals of the latter country from the twelfth century B.C. till the fall of the Assyrian empire in 630. From the discoveries already made he thought still further ones illustrative of the earlier Babylonian and Jewish histories were likely to be made in the plains of Mesopotamia, where the records of the older Babylonian archives inscribed on terra cotta were to be found. He referred to the discoveries by Captain Wilson and Mr. H. E. Palmer at the Wady Magarah and Sambut el Khadem, in the Sinaitic peninsula, as illustrations of the period of the Exodus. In Palestine he instanced the recent discovery by Dr. Ganneau of a Hebrew-Phœnician inscription near Jerusalem, as throwing light on the disputed question of the Hebrew characters in the days of the Kings, and holding out the hope of future acquirements, like that of the Moabite stone. The early histories of the great monarchies of Egypt and nations of Central Asia, he said, were not to be found written in books, but inscribed on rocks and stones, which cannot be studied in our libraries, but must be disinterred from the plains of Mesopotamia and the Valley of the Nile. Professor Donaldson moved that the address be printed, which was seconded by Mr. Boyle, and unanimously carried. The Rev. A. Mozeley and other speakers addressed the meeting. Captain Wilson, in proposing a vote of thanks to the chairman, stated that he was a member of their new society; and in respect to the Palestine Exploration Fund, with which he was also intimately connected, he thought, the objects being different, the two institutions would mutually aid each other. Mr. Bonomi seconded, and the thanks were duly acknowledged; as were those given by Mr. W. R. Cooper, the secretary, for his exertions in the establishment of the society.

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"WORKMEN'S TRAINS."

Mr. C. Dawson, Chairman of the Metropolitan Association for securing cheap railway travelling for the working classes to and from their work, in an appeal on behalf of the association, remarks that four of the metropolitan lines have yielded to facts and proofs by running work-people's carriages, and "happily they pay." We shall be glad to see all the other companies adopting this plan on a much larger scale. Mr. Dawson makes reference to extending the boon to work-women, work-girls, errand-boys, &c., who are, as he says, at present compelled to live in close, pestilent streets, or to walk, morning and evening, many miles, arriving and returning weary and worn. If the railway companies know their best interests, they will extend the benefits of workmen's trains to women and girls; but a point not (apparently) taken cognizance of by Mr. Dawson is that sempstresses and work-girls will not require to travel by the same early trains as bricklayers, &c., who have to be at work at six o'clock in the morning. The females have to be at work from eight to nine o'clock in the morning, to from six to nine o'clock in the evening, beginning later and ending later than the men. The institution of workmen's and workwomen's trains on a sufficient scale could not but have a marked effect on the health of London, inasmuch as it would relieve its overcrowded state, and we should no longer hear of there being (as there are said to be at present) 80,000 small houses standing empty in the suburbs of London.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

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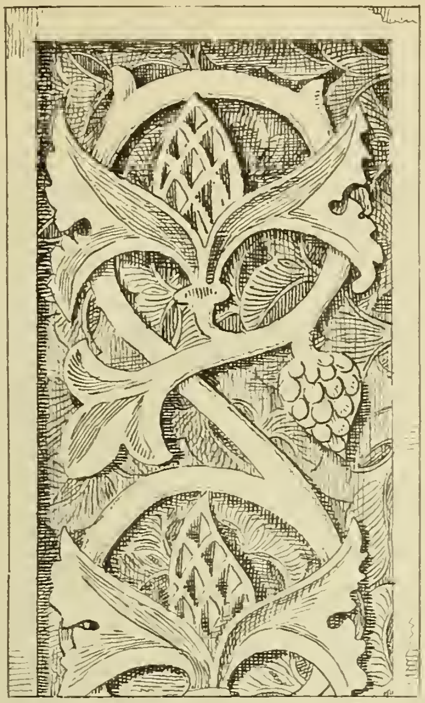

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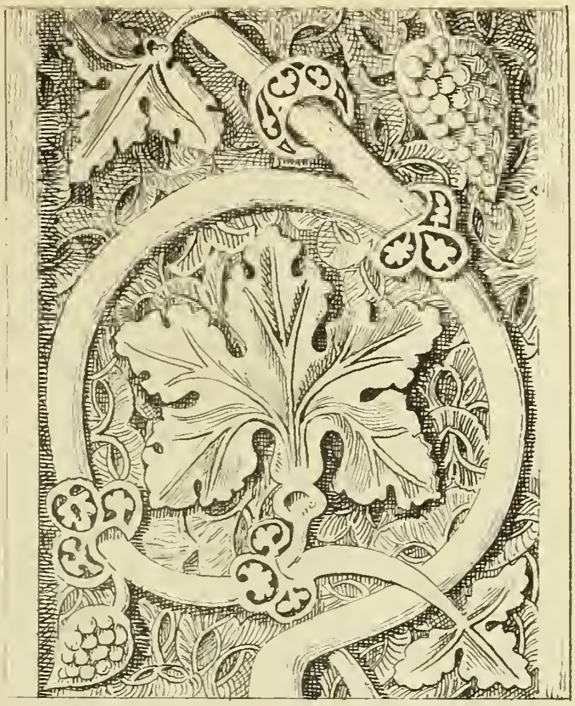

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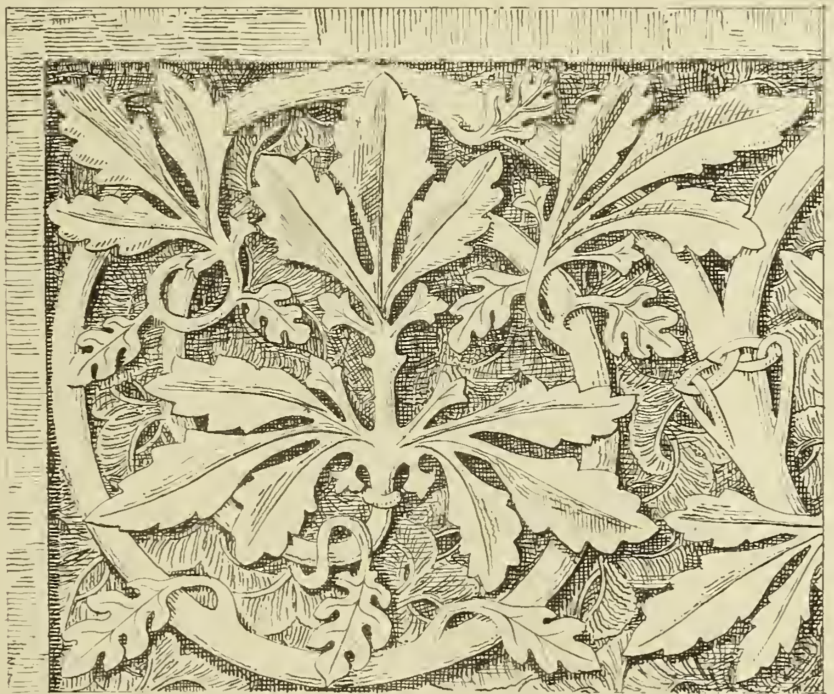

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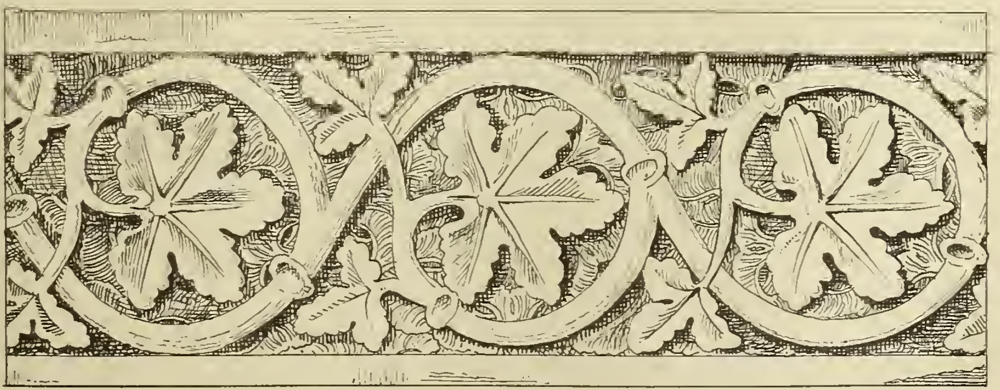

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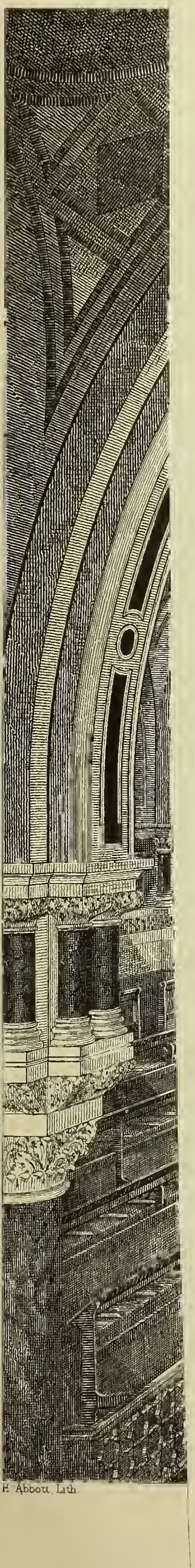
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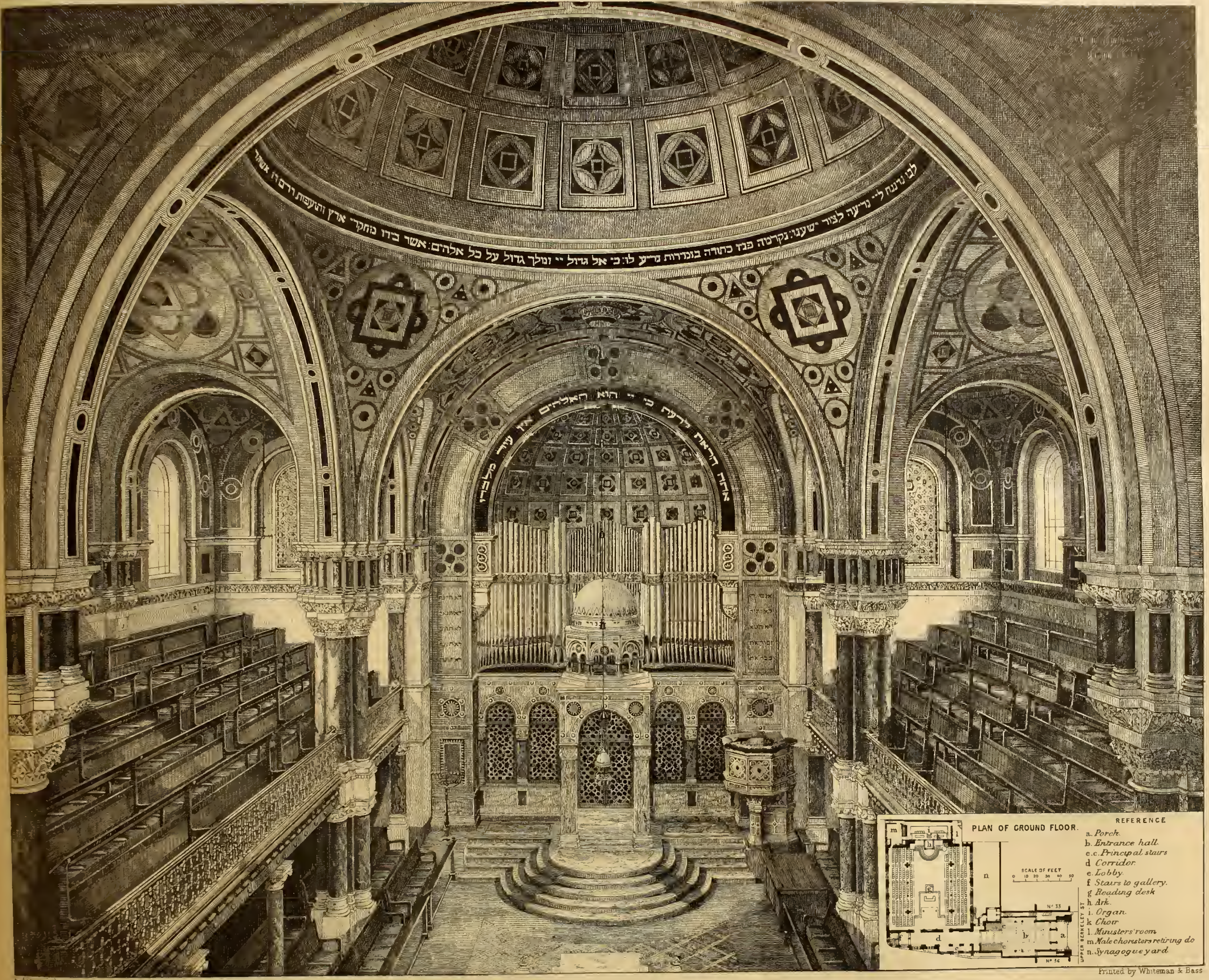

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INTERIOR VIEW OF THE NEW WEST LONDON SYNAGOGUE.

DAVIS & EMANUEL, ARCHTS, 32, MOORGATE ST, CITY, E.C.

"THE SACRISTY."*

SUCH is the somewhat unfortunate name of a serial whose object is evidently to continue the traditions of the *Ecclesiologist.* When we look at the career of the last-named work we are perhaps as much astonished at what it did as at what it failed to do.

It certainly taught architects and amateurs to build parish churches very like old ones, but it utterly failed to give us any art, properly so called. At the same time, great allowances should be made for the Ecclesiological Society; the founders were all amateurs; some of the best of them left the Society at an early stage of its existence; there was very little art-knowledge at the period, and little was known of our ancient domestic architecture; whereas a church was to be found in every village, and consequently afforded means of study. Hence arose the science (not art) of ecclesiology.

After teaching this same science for nearly a quarter of a century, and after making the production of an absolutely bad church almost an impossibility, the Society considered its mission fulfilled, and very naturally dissolved itself.

Whether it is a prudent or desirable course to take up the teaching of the said science is a very open question. for nothing can be more delusive than to expect a resuscitation of Mediæval art from an ecclesiastical branch of it alone. On the contrary, it will probably be from the development of our domestic wants that we shall obtain the art of the future, and it is for this reason that one grieves to see Mr. Gould's new serial with so narrow a title and so limited a scope.

After all, if we take stock, we shall find that up to the present time we have little to boast of in matters of art. We have hardly erected an ecclesiastical building, and certainly no domestic edifice, which shows the full application of the various arts (major and minor) as they were practised in the thirteenth century. Mr. Gambier Parry's church at Highnam is, perhaps, the nearest approach to unity and completeness, but if we subtract the still unfinished paintings of the accomplished founder there will remain but little real art in the rest of the affair. The stained glass is by no means equal in merit to the paintings, which, by the way, it obscures so much that dormer windows have had to be erected over the clerestory.

As to domestic buildings, the most complete are the new Houses of Parliament; but although there is an endless amount of carving, brasswork, and gilding, there is really no monumental art. It is true there are sundry frescoes done by artists who have been working all their lives at oil exhibition pictures. and the result is—naturally what might have been expected.

But to return to the *Sacristy.* Although we must regret that Mr. Baring-Gould has not taken a larger view of Mediæval art and its application, we may well be thankful that he has continued the movement. Let us hope that as time wears on, and the work becomes successful, some more catholic title may supplant the present one, and, above all, that the great epic of domestic art may come in for a share of attention equal to that given to ecclesiastic matters. It is not to be forgotten that, to the general public, the one is an every-day affair, while the other is brought to their notice only once a week.

According to the prospectus, the *Sacristy* is designed as a means of communication between lovers of Christian art and those engaged in church restoration. Alas, it is rather late in the day to talk of church restoration when every one of our old churches has been "very much" restored—when young men have begun their professional lives with church restoration, the most difficult and worst-paid work in the whole practice of architecture. In a very few years we shall have no old churches. The Reformers and Puritans destroyed our paintings, stained glass, and sculpture, and the present generation has finished the work, by restoring the buildings themselves.

In reviewing the present number it should be remarked that both the editorship and the papers are gratuitous. This, it is to be hoped, will be altered as this publication advances in circulation. If a man writes on a difficult subject, and if an editor has to read and arrange a mass of MSS., it is only just that the time thus employed should be remunerated. There is one feature which proves much in favour of the new serial—viz., that several of the most important articles are signed. Thus the number opens with a paper on the completion of S. Paul's, London, by J. T. Micklethwaite, a former pupil of Mr. Scott's. This gentleman begins with a *resumé* of what has been done up to the present time. Thus we are told that the mosaics in the spandrels of the dome are in themselves good, but if continued will have the effect of reducing the apparent size of the building, and that the roof of the choir has been painted in what must be described as the drawing-room style.

Now the mosaics in the spandrels of the dome are not in themselves good, but they display the same unhappy blunder as we see in those in the pediments of the Albert Memorial —viz., the gold of the background is not carried through the draperies, and accordingly in some lights the figures look like dark masses on an intensely brilliant ground. Both were cases where the architect should have revised the cartoon before the execution, and they only show how necessary is his supervision. As to the drawing-room look of the roof of the choir, S. Peter's at Rome labours under the same defect: it looks like a boudoir on a most gigantic scale, but this is really a defect of the style of the building, and no one would recommend the Byzantine mode of treatment in S. Paul's, unless all the mouldings and ornaments were to be chiselled off in the first instance.

Mr. Micklethwaite's scheme is to restore the present choir, and use it for a morning prayer chapel. A baldachin is to be erected under the eastern arch of the dome, and from it a short but very broad choir is to project westward. To this it might perhaps be remarked that the choir in the Duomo at Florence presents the same conditions and a different mode of treatment, perhaps a better one.

The second paper is by Herr B. Ecke, on what he calls the "Beast Epic," in which the fox is more particularly described. These sculptured animals in sacred costume, which we so frequently find in churches, are shown to be nothing more than allegories of the deceits of the devil, and, in fact, they are the lineal descendants of Æsop's fables. The latter, indeed, are often found literally rendered: thus among the precious series of incised stones in the cathedral of S. Omer, we find, *inter alia*, the fable of the "Fox and the Crane."

The next paper is an account, by the editor, of how a certain Jean Aymon robbed the royal library at Paris, in the middle of the seventeenth century.

Then follows a description of the Mosaics at Ravenna, by R. W. Twigg. This is a very valuable paper, inasmuch as it describes the costume; it should, however, have been accompanied by one or two key drawings, showing the position of the figures.

Then follows a notice, by J. Fowler, on some representations of the Virgin, with two children, on painted glass, in Nostell Priory Church, Yorkshire. These representations are found in a series of very late (1587, 1685, and 1717) German or Swiss domestic glass presented to the church by Charles Wynn, Esq.; but at Thornhill, in Yorkshire, there is a perpendicular window of 1492, representing the same subject. The second child is S. James, the half-brother of our Lord, and who is said to have been very similar to him in countenance, hence the kiss of Judas at the betrayal.

There is a very curious representation in Viollet le Duc's "Mobilier Francais," representing a seated woman, who supports two children on her lap, while around are several other children. M. Viollet le Duc thinks the embroidery (for it formed part of a veil stretched before an altar) is symbolical of charity, but, curiously enough, not only is the woman nimbed, but every one of the children is nimbed likewise, and, if we may trust the engraving, the child on the right knee bears the cruciferous nimbus.

The paper on colour for decoration, by Mr. John Aldham Heaton, is one of the best, if not the very best, in the number, and deserves careful study, but of course colour is not to be taught by words alone. It requires in the first place a certain amount of natural ability for it; then careful observation; and thirdly, where possible, good teaching. Mr. Heaton first warns us against the indiscriminate use of very bright colours, and then insists that all colours should be broken up. These, of course, are no new discoveries, and, indeed, are at the bottom of all good colouring, but they can never sufficiently be drilled into some people, who imagine the brighter the colours the more beautiful the work. There are, of course, harmonies and harmonies; there is, for instance, the harmony which is produced by making a stratum of dirt go through everything. This is a very favourite resort with some decorators, as it is with some artists. Like the Queen Anne's architecture, it saves trouble, and, above all, saves thinking; but with a little practice, any one can do it—it is so easy to be dirty. Then, again, there are combinations of the brightest colours, all vivid, yet all broken up—such as we see in the best Persian decorations, and such as Fra Angelico painted—there is no royal road to those harmonies. As it is, the colouring of stained glass manufacturers and that of decorators is at the very lowest ebb, but we shall certainly not get out of our dilemma simply by making dirty harmonies.

Mr. Heaton tells us that Messrs. Morris and Co. have applied high art to their work; but surely he might have added that other persons have done so whenever they have been able to procure coloured cartoons from artists.

The next paper has nothing at all to do with art; it is pure and simple ecclesiology, giving a sort of recipe how to design a church. As there is no name to this paper, and as it consequently carries no authority, it may be passed over.

After this comes "Sketches in Foreign Churches," and three pages are taken up with what an Xaverian brother said to a class of little girls in the church at Denaux when catechising, and what the little girls said to him. It reads like an extract from some of the "Goody-goody" books published by Masters. Next follows an account of the windows of Strasbourg Cathedral; it is signed "F. P.," but it loses its interest in a certain degree, as the account was drawn up before the late bombardment. It is a pity we are not told what has been lost and what remains.

The new church of S. Barnabas, Oxford, is criticised, and very well criticised, by Somers Clarke, jun., who concludes with the remark that its reputation as a cheap church has been over-estimated; it appears that the cost is something like £5 per sitting. "Art Metal Work" is an anonymous paper, recommending that both brass and iron should be used in a cast state, instead of being almost exclusively wrought, as at present. Of course, it is much cheaper to design leaves and flowers than a well-balanced and well-relieved model. The following extract is true, not only of iron and brass, but of architecture, witness the lithographs which we so often see adorning (?) various architectural publications:—"It is really painful to see the distortions and spasmodic flourishes so rampant in modern iron work—an extraordinary angularity and unexpected breaking of lines which, in the cant of the craft, is called 'go,' but which is really nothing more than a little sensational vulgarity, and perfectly different from the work of the middle ages or of the early revival." This paper ranks after Mr. Heaton's as being the best in the book. It is a pity that the author has sought refuge in the anonymous. There are several other contributions, including a piece of poetry, and a liturgical puzzle, but all anonymous. In fact, there is certainly a sufficiency of matter for the half-crown. But with the exception of Mr. Heaton's paper on colour, and perhaps that on art metal work, there is very little about art, or tending to advance it. Of course, there is a great deal of ecclesiology, as might have been expected, but ecclesiology is not art. Indeed, Professor Ker in his admirable "New leaf" discourses, years ago, proclaimed that ecclesiology was neither art nor architecture. The Ecclesiological Society did its work, and did it well. When it was done the Society was very properly dissolved, and its publication discontinued. Whether it be desirable to revive the latter under another name is an open question. What is desired at present is some publication which will take up not only ecclesiastical but domestic art in all its branches, working from the thirteenth century as a standing point, and absorbing all the knowledge of the nineteenth century as auxiliary, so that eventually we may arrive at a higher point than our forefathers ever dreamed of. The beginning, however, must be made by the architects, who must be educated. When they are educated, and can draw the figure sufficiently to direct the painters and sculptors, there will be less occasion for the employment of notches and chamfers. Some gentlemen have, indeed, found out that the art-architect is damaging the profession. So he is for the architect and surveyor, who hereafter will most probably be relegated to the latter variety of his present anomalous qualifications. When, however, those gentlemen who now complain draw the figure, even "indifferently," it will be quite time to argue the question with them.

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* *The Sacristy.* A Quarterly Review of Ecclesiastical Art and Literature. (John Hodges, 47, Bedford-street, Covent-garden. 1871.)

W. Burges.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. ZERFFI delivered the twenty-fifth lecture of his course on the above subject in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. In commencing he said that in treating of art from its dawn in prehistoric times to the periods of the Greeks and Romans, he had drawn attention to a gradual and progressive development observable both in the forms and the materials used. The primitive huts of the wigwam type had given place to marble palaces; instead of the geometrically adorned pottery of the savages we had highly decorated ornamental vases; the wooden idols with the big heads had changed into the marble statues of a Phidias; the Colossus of Rhodes replaced the small and insignificant bronze works of Egypt, and a corresponding improvement had extended itself to agricultural implements, weapons, and articles of personal ornament. This development had varied on different parts of the earth's surface, and the progress of art had been shown to have been in every case in close connection with the influences of climate, mode of living, religion, and social organisation. Language and literature might well be called the rays of the civilisation of a people, whilst art was the true reflex of those rays. Nations with low and undeveloped languages had no art in the strict sense of that word; those with borrowed and mixed tongues had an imitative art which progressed at the same rate as the power of expression increased from the concrete to the abstract. The more philosophical the language became the more idealistic was the art. If, however, as with the Indians, language became transcendental, in the sense of Kant, and roamed in regions which could not be fathomed by the understanding, art became symbolic. It was often coarse, and generally remained undeveloped until a new current of thought dispersed the counteracting influences and it regained activity, and with activity, life. Languages kept artificially in a fixed state, as the Hebrew, Zend, Sanskrit, Egyptian, and Abyssinian died out, or at least lost all their vitality and became stationary. Nations with such languages had either no art at all, or that which they had remained immovable. No mistake should be made with regard to the Indians. A new religion which had opposed the old Brahmanic ideas had excited the people to construct marvellous edifices. Art, like language, if it took new forms, generally founded them on old ones which had died away and were resuscitated with a new spirit. During no period of art was this assertion more strikingly borne out than in that which was then under consideration. Etruscan, Greek, and Roman elements vanished, and art was endowed with an entirely new character. The forms were often the same, but exhibited a new spirit, and thus appeared to be totally different. An art which grew with the national life of a people would impress the very trade productions with its ennobling spirit. At such a period the utensils for cooking and every-day use, and the toys of children would serve as expressions of that taste which became a kind of bright atmosphere, illuminated by the brilliant rays of an artistic genius. At the present day we, absorbed in utilitarian creations, had nearly dispensed with artistic feelings, and had neglected sculpture as altogether superfluous. Fortunately, however, this spirit had begun to die out, and we felt we might have not only strong and useful, but also well-ornamented household goods. To foster this tendency, and to spread a correct taste for beauty in ornamentation, was our duty. The lecturer next proceeded to continue the subject of Roman art. He said that the gems, copper, silver, or gold coins and medals, served us in reality as historical records printed on leaves of metal or precious stone. The gems were worked with great care, either in intaglio (deeply cut into the stone) or in relief (cameo). The inscriptions on these stones were short and concise. The art, called glyptic, had taken its origin in superstition and religious prejudice, worldly wisdom, and a feeling of individual independence. Men had always had an intense veneration for amulets. In more remote times a fish-bone, the feather of a bird, or a few hairs tied in a rag had been thought to possess supernatural powers. Later, geometrical figures had been employed, till, in the period before us, silver, gold, and precious stones had been used as safeguards either against illness or the influences of cruel divinities. The Greeks and Romans had believed that jade had a very wholesome influence on the kidneys. The amethyst (from 'σ and μεθυω not to get drunk) was thought to be an antidote for drunkenness. Luxury in jewellery had been immense with the Romans. Seneca complained that two pearls surmounted by a third were required to make an ear-ring, and said "the raving fools think their husbands not sufficiently tormented if they have not two or three inheritances hanging in each ear." Ornaments might be classified under three principal headings. 1. Pendants, representing the law of gravitation, always symmetrical. 2. Circles, as the expression of the spherical motion of planets, obeying the law of eurythmy. 3. Lines of direction which were neither symmetrical nor eurythmical, but pointed either front or back, distinguishing the two directions by totally different lines. Nations might to a certain extent be judged by the prevalence of one of these principles in their dresses. The Egyptians had been exclusively symmetrical; the Persians, Assyrians, and Chaldæans had delighted in the circle; and the Greeks and Romans had used all three with harmonious discernment. The sums spent on jewellery had been enormous. Lolla, the daughter of M. Lollius, and wife of the Emperor Caius Claudius, had appeared in public covered with emeralds and pearls of which the value was £304,000. The one pearl which Cleopatra had sacrificed to Antony had been worth £81,520. Metals had been worked with sharp instruments and either chiselled or embossed. Every description of gold and silver plate had been used at their sumptuous banquets. The hands had been washed in splendid metal dishes. The drinking vessels had been of the greatest elegance, and adorned with embossed or wrought figures, which were often moveable, so that different vases or goblets could be ornamented with them. Michel Chevalier, in writing of the International Exhibition, 1851, said that he had seen an oriental saddle, beautifully embroidered, and adorned with precious stones, the patterns of the ornamentation being full of intricate delicacy; but when, on looking at the stirrups, he had found them made of coarse iron, he had immediately come to the conclusion that the saddle was the production of a half civilised nation. The works of art he (the lecturer) had mentioned till then would not alone have been sufficient to prove that a high degree of civilisation had existed amongst the Romans, but this people had been as clever in the working of iron as the Greeks. They had worked helmets of polished iron of such excellence that these had resembled silver. Workers in bronze had been mentioned in the times of Numa, but none in iron. The bronze works had been embossed. The ornamentation had consisted of arabesques, or wild animals, the clasps having been made to represent lions' heads. The head of Medusa had often formed the centre piece on breastplates and shields. In the older works Asiatic forms had prevailed; those of later date and better workmanship had been in the Greek style. At first caps made of skin or leather (*galea*) had been worn. During the Republic these had been replaced by bronze helmets (*cassis*), with richly ornamented crests. Under Camillus (about 367 B.C.), polished steel helmets, ornamented with either three black or three red feathers, had been introduced. At the time of Hadrian, the cavalry belonging to the legions had worn casques with a visor of iron richly ornamented with gilt bronze work. The plumes had been of red horse-hair. Breastplates had first been of leather, and weapons of bronze, both having been subsequently of iron. Bundles of hay attached to long poles had originally served as standards; later bronze hands had been used, till Marius had introduced the eagle as a common standard for the army. Not less developed had been the rewards for bravery. There had been the *corona civica* for one who saved the life of a citizen in a battle; the *corona muralis* for one who scaled a wall, both having been of gold. The *corona navalis* or *classica*, for those who distinguished themselves in the navy, had been a circlet adorned with the beaks of ships in gold. In addition to these there had been the *corona obsidionalis*, of weed or grass; the *corona aurea*, and many others. Medals attached to leather straps had been worn over the armour. It was to be expected that a nation that had delighted in outward pomp and luxury should have also had a grand and imposing ritual in religious matters. The sacrificial vessels, plates, goblets, dishes, salvers, tazzas, small caskets, knives, hatchets, incensers, lamps, musical instruments, and the smaller and larger altars, with or without statues of divinities, had given the ornamentist a large sphere in which to apply his knowledge of mythology and symbolism. Whilst the plates and vessels of every-day use had been adorned with scenes from heroic legends, or of hunting, or with wild and fantastic arabesques, the religious vessels, though scarcely differing in shape, had been generally ornamented with scenes from the life of the divinity to whom the temple had been dedicated. The sumptuous private life, the heroic spirit for military duty, and the pompous religion, full of exciting rituals, festivities, processions, and sacrifices, had required imposing public amusements. The Circensian games were said to have been introduced in his grand circus by Tarquinius Priscus. They had consisted of horse and chariot races. Theatrical entertainments had always been less frequented than the circus. Sanguinary exhibitions of wild animals devouring one another, or of men murdering each other, had always been more highly valued by the masses than intellectual amusements, which elevated the mind and improved manners. The tragedy had been with the Romans a mere sham. Having once tasted of the excitement of assisting at a real fight, of witnessing real killing performed with great grace, the merely assumed mental sufferings of a hero could no longer interest them. The amphitheatrical games on a large scale had first been introduced by Julius Cæsar. At the last stage, the really sanguinary combat had, with great refinement, been preceded by a kind of sham fight, which had served to excite a desire in the masses to see the joke, become earnest. Having drawn attention to a splendid piece of armour in bronze which had been used to protect the head of a horse, and which was now in the British Museum, the lecturer concluded by observing that we had studied the Romans in their architecture, which had been grand and imposing; in their sculpture, which had been sensual and debasing; in their household furniture, which had been luxurious and enervating; in their religious ceremonies, which had been pompous and stupefying; in their military array, which had been vain-glorious and boasting; and in their public games, which had been sanguinary and degrading. Whilst he could, therefore, not approve their tendency to overloading, he could not too strongly recommend the careful study of their motives of decoration, in which they had preserved so much of Greek beauty and the correct laws of ornamentation. The next lecture, which will be delivered on Tuesday, the 18th inst., will be on Christian Art, with special reference to symbolism.

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It is proposed to utilise a large plot of vacant land at the back of Westminster Chambers, Victoria-street, by the erection of the Parliament Club Chambers, which, besides club-rooms, are to contain 114 bed rooms.

THE BIRMINGHAM ASSIZE COURTS AND CORPORATE BUILDINGS.

THE COMPETITIVE DESIGNS.

A WRITER in the *Birmingham Daily Post* says of these designs, on which we offered some comments last week:—

"We shall now speak of the designs only. There is a vast amount of thought, labour, and cost embodied in the twenty-nine sets of drawings now on view; and it is painful to feel that very much of it has been wasted—unless, indeed, the architects concerned can bring themselves to regard their labour as so much 'practice.' But, however ungracious the task, the truth must be spoken. These gentlemen have submitted their work to public criticism, and whether it is agreeable or not, they must hear what people think. Well, then, the truth is that none of the designs are of a sufficiently meritorious character to justify their execution. We do not know what award Mr. Waterhouse may have advised; but he must have been sorely puzzled to give advice at all. The competitors themselves, we think, would come to much the same conclusion, if the judgment were placed in their hands. Supposing each man to have two votes, and to give one for himself, there is no design of such excellence as to certainly command all the second votes, or a decent majority of them. Several of the competitors are plainly unfitted for the strife they have entered upon: there are some designs so clearly bad that nobody would care to look at them twice. Of the rest, a considerable number are generally feeble in conception, poor in detail, and ineffective in grouping. Even the best fall short of that kind of originality which instinctively commands attention, to say nothing of compelling admiration. As we have said, there are none which justify the expenditure of so large an amount as £120,000 in their erection. Of course, there are degrees of merit in these designs. There are several which are more than creditable, considered as drawings; and there are others which might suit a less ambitious purpose than that involved in the competition. But we repeat that there are none which satisfy the requirements of a great public edifice. We look down screen after screen for evidence of unity of conception and vigour of expression; but we look in vain. Little meets the eye but lifeless repetitions of Classical forms, used without real understanding of their true meaning; or copies or adaptations, sometimes correct, sometimes fantastic, of Gothic models. Here and there we have an 'Italian' design, in which the severer forms of Classic architecture are what is called 'adapted' to modern requirements; and in one instance a competitor has wandered into what he describes as 'the Renaissance,' but which regard to truth obliges us to characterise as the 'Rococo.'

"As regards the style adopted by the competitors, Gothic of one kind or another preponderates, there being seventeen Gothic designs as against twelve Classic, ranging from pure Ionic down to the sort of Italian which is instinctively recognised by architects and speculators as the natural style of hotels and 'offices.' It is interesting to observe that almost every Classic design, if not every one, is crowned by a dome, sometimes lifted high upon the summit of a sort of tower. Every Gothic design, of course, has a tower, occasionally finished with a spire; and in some instances the competitors have liberally thrown in corner towers as well as the great central structure. As to the rest, the Classicists mostly give us a rusticated basement, surmounted in the principal front by a portico, with sculptured pediment, and a colonnade stretching out on either side, and shrinking timidly under pressure of the inevitable dome. Here and there, in the Italian (or shall we say 'Modern Classic'?) designs, we get rid of the colonnade, though, as if to make up for this deficiency on the part of his competitors, one designer has a double colonnade (full Corinthian) built obviously as a screen and nothing else, and with a sort of dwarf wall between the columns, broken up into tablets suitable to be inscribed with the names and virtues of deceased aldermen. The worst of the Classic designs is that they are manifestly either dead, and therefore incapable; or, if imbued with modern ideas, they are wanting in dignity, and therefore unsuitable. As to the former class—the revival of really Classic models—the Town Hall is enough for us: we do not want another Pagan temple to misrepresent the life of a modern English town. As to the latter class—the 'Palladian' or the 'adapted' Classic—however suitable it may be to domestic uses, we cannot recognise it as possessing sufficient massiveness, breadth, and grandeur of effect for a great public building. It does well enough for warehouses and hotels, but it does not, and cannot, in any sense realise the idea of corporate use, which ought to be expressed in the chief edifice of a community like ours. A third variety of the Classic—the type of which Sir William Chambers is the chief exponent—is yet more unsuitable: as represented here it is characterised neither by the severe fidelity of a revival, nor by the picturesque freedom of modern 'Italian.'

"The Gothic designs, though our sympathy turns strongly towards them, are even more disappointing than the Classical. There are towers, spires, pinnacles, arches, oriels, and buttresses in abundance; and not unfrequently there are to be noted very charming 'bits' of detail, and picturesque groupings. But as a rule these designs are wholly uninteresting. There is nobody among the competitors who seems imbued with the spirit of Gothic art. We are not such purists as to be repelled by departures from the model period selected by a designer. Victorian Gothic, if it be really living, is as welcome to us as the strictest Early English. But we do require some evidence of a living power of design, and not an exhibition of mere technical skill in the repetition of ancient forms. It would be unjust, perhaps, to say that the Gothic designs are more unsuitable even than the Classical; but it must be said that for the most part they are bald and poor, and that when originality is attempted, the result is too often a fantastical congregation of deformities.

"We are really very sorry to have to speak with seeming harshness of so many efforts at design, no doubt more or less well intended. The result, however, is one of the inevitable consequences of competition. Many of the ablest architects will not spend thought and labour—to say nothing of cost—upon a contest in which chance, or caprice, or ignorance, often determines the award of victory. It is wiser, we honestly believe, to take even an inferior architect, and set him to do his best, with ample time for consultation, without the confusing stimulus of competition, than to invite a contest in which each man is hampered by the sense of pressure and the consciousness of probable loss. However, we cannot expect the present competitors to agree with us, either on this point, or as regards the general judgment we have, with no little regret, been compelled to pronounce upon their works. Some of them, indeed, look upon their efforts with a fondness which may be excusable, though the form of its expression is occasionally a little too self-conscious. For example, one gentleman describes his design as fitted to 'complete a public place, probably the most magnificent in the country.' Another says that the style he has chosen (and by implication his illustration of it) is 'admirably adapted for lightness of proportion, affording the most natural ventilation.' The 'details and ornaments,' he adds, 'are of a character and harmony suitable to the locality and importance of the town, avoiding survile (*sic*) copyism, but consistent with the times in which we live.' Another mentions as the characteristic of his work, that, 'architecturally speaking, the principal feature of the design is a dome,' and that the style is 'a modern adaptation of Classic, not picturesquely beautiful, but stately, grand, and dignified.' One competitor gravely proposes to make room for statues commemorative of 'the most celebrated Mayors of Birmingham;' and another, a little uncertain as to archæological learning, vaguely describes his Gothic as 'slightly Continental.' The greatest triumph, however, is achieved by a gentleman who is so greatly enamoured of his design that he proposes to make a grand sweep—demolishing Christ Church, erasing Congreve-street, and removing the Town Hall, in order that *his* building may be seen to the fullest advantage."

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S. MICHAEL'S CHURCH, OTTERTON.

THE new church of S. Michael, Otterton, the foundation stone of which was laid in March last year, was consecrated on the 29th ult. Glancing over past history, Otterton — a pretty village on the south-eastern coast of Devon, and distant a few miles from Sidmouth—can boast of something like ancient renown. A priory belonging to an abbey in Normandy was founded there at a very early period, and one Galfridus, a monk who wrote about 1260, tells us that the manor was one of the principal in England. Upon the site of the old priory or nearabouts the former church stood; but latterly it has fallen so much into decay, that, save only the old tower, little remained of the early work. The walls were of "the old Devonshire cob,"—mud and straw: the pews were very convenient places for anyone who did not want to be seen, and the building had a dirty, woe-begone appearance both inside and out. The church has now been entirely rebuilt, with the exception of the main walls of the tower, which, being in good condition, were not touched. The ancient building consisted of a nave, south aisle, a north transept, and a chancel, but the present church, the scale of which is altogether larger, comprises a nave 66ft. long and 26ft. 6in. wide; north and south gabled aisles, 63ft. long and 17ft. wide, and a chancel of good proportions. There are spacious north and south porches. The tower occupies the same position relatively to the rest of the structure as in the old building, but a south-eastern angle turret has been added, and its windows filled with tracery. The walls of the church are principally constructed of Berry Hill stone, with Ham Hill quoins and dressings. Internally the building is lined with Ashlan stone, from Beer. The architect is Mr. Benjamin Ferry, F.S.A., of London, and the contractor for the whole of the works was Mr. Burridge, of Exmouth. The total cost will be £8,000, which will be defrayed by Lady Rolle. This is the third church built by that lady in the immediate vicinity of her residence within the last twenty years. The other two are Bicton Church, of which Mr. John Hayward was architect, and Witthcombe, designed by Mr. Ashworth. Both these were erected at a greater cost than has been that at Otterton. The clerk of works employed at the latter was Mr. Thomas Cloutman.

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SUPPOSED REMAINS OF A LAKE VILLAGE AT LOCHEND.

A DISCOVERY of considerable antiquarian interest has recently been made in the vicinity of Lochend. In a strip of ground, formerly covered with water, but now laid bare, along the western margin of the loch, Mr. David Grieve, Lochend-road, an active Fellow of the Society of Antiquaries, had his attention attracted some months ago by the discovery of some remains of trees embedded in the soil. The wood was fast crumbling into mould, and it was only on careful examination that the eye detected what appeared to be the outlines of heavy logs disposed along the surface at pretty regular intervals. Pursuing his observations, Mr. Grieve discovered that the remains extended along the shore of the loch for a distance of 120 yards, the impression conveyed being that they had formed part of a great wooden framework or platform. In the absence of any other feasible explanation of such a structure, the supposition naturally suggested itself that the timbers had served as foundations for an ancient lake village. The matter having been brought under the notice of the Scottish Society of Antiquaries, some excavations were made a few days ago with a view to more minute investigations. Three or four pits were dug, and each disclosed rude logs of wood, lying parallel, or nearly so, and resting on other logs which lay in a different direction. Some of the logs were of oak, but the greater number seemed to be of pine, with the bark in many instances still remaining. The wood preserved its general appearance, but, when taken in the hand, crumbled away like clay. Between the logs was found a mass of rich black mould, intermixed with nuts and fragments of small branches. This is supposed to be the remains of fascines or bundles of underwood, which might have been used for filling up the interstices. Owing to the rapid accumulation of water, it was found impossible to ascertain the number of tiers of logs, or the depth to which the framework extends. No implements or other traces of human occupation were discovered. It should be mentioned, however, that Mr. Grieve recently fished from the bed of the loch, near by, a number of bones, some of which have been identified as those of the red deer. On the part of the antiquaries who have visited the place, there seems to be a strong impression that the timber framework indicates the site of a lake village, though further investigation may perhaps be necessary before the point can be conclusively determined, and the age of the remains ascertained.

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SCHOOL BUILDINGS.—A paragraph in the *Journal of the Society of Arts* some time since stated that the Education Department had prepared plans for school buildings, of various sizes, and was willing to permit their publication. It now appears, from an official letter in reply to inquiries on this subject, that "arrangements have been already made for the publication of selected plans, specifications, &c., and the Queen's printers are now preparing, for sale, diagrams with specifications and bills of quantities." This will no doubt be a great boon—school boards or committees will have ready provided a choice of approved plans from which to select at once such as may be suitable to the varying requirements of their several parishes.

Building Intelligence.

CHURCHES AND CHAPELS.

Carlisle.—Memorial of Bishop Waldegrave.—A monumental brass, to the memory of the late Bishop Waldegrave, has been erected in S. Stephen's Church, Carlisle, by Miss Burdett Coutts. It is of oblong form; at the ends are figure subjects symbolising the Resurrection and the victory of the redeemed; these are surmounted by lilies of the valley, arranged to form *fleurs de lis*, as suggestive of affection and purity. Below these figures are quatrefoils displaying the monogram of the Bishop, with interlacements of trefoils, the colour of each arranged to form a cross. At the bottom, the border exhibits the emblems of the Evangelists S.S. Matthew and John, and contains the name of the founder of the church in which the memorial is fixed and of its donor. The three compartments of the upper border are richly foliated; at their junctions are the emblems of the Evangelists S.S. Mark and Luke, surmounted by tabernacle work. These form abutments for a tympanum; this, in its centre, displays the arms of the See of Carlisle impaled with those of the Bishop. The crowning ornament of the memorial is the cross. A highly-polished gray fossil marble forms the ground or tablet upon which the brass is fixed. The brass has been designed and executed by Messrs. Hart, Son, Peard, and Co., of London, for Messrs. T. and J. Nelson, of Carlisle, to whom the work was entrusted by Miss Coutts.

Marton.—The interesting old church of Marton is now being pulled down for the purpose of being rebuilt. The demolition has revealed certain facts bearing on the history of the structure. Several stone coffins of the thirteenth and fourteenth centuries have been discovered in the walls, and there are signs of successive alterations and restorations. The church dates from the latter part of the thirteenth century, and the structural alterations appear to have been completed, as in the case of the majority of the Warwickshire churches, in the latter part of the fifteenth century. It is evident, however, that the church had suffered at one time from fire, but nothing was discovered to show the date of this event. In the exterior wall of the chancel a bullet was found embedded, and as it is a matter of history that a skirmish took place in this neighbourhood between the Parliamentary and Royalist troops in August, 1642, in which the king's troops were worsted, the bullet may be fairly considered of that date. The neighbourhood was the site of an older battle between the Danes and Saxons, in which the son of Offa, King of Mercia, was killed, and was subsequently buried at Offchurch (*vide* Saxon Chronicle), when before or after his father founded a church. Two piscinas have been found, together with some stained glass, and an inscription of the Tudor period. The works are progressing rapidly, and are being carried out under the superintendence of Mr. Punshon, Mr. James Marriott being the contractor. The lay rector of the parish is Dr. Jephson.

Newton Abbot.—S. Mary's Church, Newton Abbot, Devon, was re-opened on Sunday week. The edifice has been entirely modernised, re-seated, and re-decorated, from designs by Mr. J. W. Rowell, architect, Newton Abbot. All seats are of pitch pine, varnished; and the pulpit, prayer desk, and communion rail are all of oak. The credence recess in the south wall of the chancel has been restored, and the font has been removed from near the communion table to near the entrance door. An organ chamber has been erected, and the old organ remodelled by Mr. S. Hawkins, of Newton. The floors of the aisle have been laid with black and red tiles, and the space within the communion rails with encaustic tiles. The chancel window has been filled with stained glass, by Mr. Drake, of Exeter. The Decalogue tables, reredos, and decoration of the chancel have been executed by Mr. Welch, of Bovey Tracey, and the general work has been carried out by Messrs. Bearne and Murrin.

Peebles.—The foundation-stone of a new Free Church was laid at Peebles on Wednesday week. The building, which has been designed by Mr. Starforth, architect, Edinburgh, will, including the site, cost about £2,800.

S. Martin's, Lincoln.—Discovery of Roman Remains.—The workmen engaged in digging for the foundation of the new church of S. Martin have come upon several relics of antiquity, which are believed to be Roman. At a depth of about five feet beneath the surface was found a three-quarter length stone effigy of a lady with a hare in her hand; it is in excellent preservation, and we understand will be photographed for the inspection of archæologists. The workmen also found enclosed in a roughly-made stone case, about eight or nine inches square, a human skull.

BUILDINGS.

Almshouses, Fulham.—We commend says the *Athenæum*) to students Mr. Seddon's fine design for Sir William Taylor's Almshouses recently erected near the Bishop's Palace at Fulham. This work consists of a range of two-storied cottages, with a continuous high-pitched roof, having dormers rising over and inclosing the heads of the lights on the upper floor. The lower floor is slightly advanced beyond its fellow, with a series of bay-windows, the roofs of which are continuous, and supported by an arcade; at the interval of each pair of bays are (1) a blind opening, with a seat in each case, and (2) a recessed porch to each pair of houses. This lower continuous roof rests on the arcade, and each bay, although strictly such, is canopied by its proper arch. A few carved panels of stone enrich the front between the arches; the latter are, on each side of every porch, supported by engaged columns, the bases of which are utilized so as to form the seats, covered by the arcade and apt to the doors. This is a very elegant, convenient, and original mode of arrangement. Each window consists of a coupled lancet, divided by a mullion and transom, with a quatrefoil head. The line of cottages begins with an oblong tower, having an external staircase of stone and a pyramidal roof, that is surmounted by a coronet and vane. This tower supplies a very effective element to the composition of the whole; its upper stage is enriched by an arcade and sculptures inserted; a line of carved panels is placed below the parapet of the tower. [We shall give an illustration of these almshouses in an early number.]

Gateshead.—The directors of the Gateshead Branch of the National Provincial Bank of England have found it necessary to erect more extensive premises than those at present occupied. They have therefore determined to build upon the site at the junction of High-street and Swinburne-street, a bank of a plain substantial Italian character; the two fronts to be of stone, divided by rusticated piers into eight bays with a pierced parapet at the top of the building. The size of the banking-room will be about 43ft. long by 27ft. wide, and will be lighted by large semi-circular headed windows. There are also to be strong-rooms, treasury, and book-rooms on the ground floor and basement. The first floor will be arranged to meet the requirements of the resident manager, and the clerks' rooms, &c., will be on the basement. The foundation stone of the new premises was laid on Thursday last week. Mr. John Gibson, of Westminster, is the architect for the building, for which Mr. Joseph Elliott, of North Shields, has obtained the contract; Mr. William Glover is the clerk of the works.

Lambeth Workhouse.—On Monday last the foundation-stone of the new Lambeth Workhouse was laid by Mr. J. Doulton. The site selected is in the rear of the new Lambeth Police-court, and is 9½ acres in extent. The architects of the new building are Messrs. Parris and Aldwinckle, of Sise-lane, Bucklersbury, whose designs were selected by the Guardians in a limited competition. The builders are Messrs. Crockett, Dickinson, and Oliver, the amount of their contract being £44,390. The estimated total cost, including site, is £58,000.

SCHOOL OF ART.

The Female School of Art.—On Saturday afternoon the theatre of the new London University, in Burlington-gardens, was filled by an interested audience, called together to witness the ceremony of presenting the prizes to successful students of the now thoroughly-established Female School of Art. The prizes included the gold medal of the Queen, who is the patron of the institution, as well as national silver and bronze medals, won by students of this school in competitions provided by the Queen and by the Science and Art Department, some of those being limited to the school itself, and some being among all the schools of art in the kingdom. Lord Elcho presided. Mr. Rowe Valpy read the annual report, from which it appeared that during the summer session of 1870 the pupils who attended the summer session numbered 155, and the winter session 139, as against 141 and 122 of the year before. In the award of premiums to head masters and mistresses of art schools by the Art Department of the Privy Council the name of Miss Gann, the head mistress of this school, stood second on the list, and the year before it stood third. The relative value of the position thus attained was to be seen when it was taken into account that this was the only exclusively female school of art in the kingdom, and that it was conducted entirely by female teachers. In the competitions open to all schools of art in the kingdom this school this year had 28 students who reached the standard of third grade prizes, as against 23 the year before, and these had obtained two silver medals as against one the year before, three bronze, as against none in the corresponding period, and five Queen's prizes. Five students, too, obtained "Art Masters'" certificates of competency in special groups of subjects. In the national competition for fan designs two prizes had been obtained by students of this school, and a third design commended. One had been purchased by the Science and Art Department, and the three have been selected for exhibition in the International Exhibition of 1871, and for competition for the Queen's prize of £40. In the competitions in the schools the committee, as usual, had refrained from personally judging the works sent in by students. The Queen's gold medal awards had been adjudged by a committee of artists, formed of Miss S. D. Durant (sculptor), Miss M. D. Mutrie, Miss Annie F. Mutrie, Professor R. Westmacott, R.A. (sculptor), Mr. E. Armitage, R.A., and Mr. W. D. Dobson, R.A., and they decided "that, as a single work, the model of 'Discobolus,' of Myron, by Miss Emily Selous, deserves the honour of this medal." They added, "At the same time the committee cannot break up without expressing their great satisfaction with the productions of certain other candidates." The report then gave other details more particularly connected with the competitions among the students for prizes presented by friends of the school, and the list showed that trading firms were coming forward with offers of prizes for designs, among them being chromo-lithographers, oil-cloth makers, and silk weavers and carpet makers, testifying to the value of these schools, not so much because they created mere designers, but as "a means of infusing correct appreciation of that which is true according to pure taste."

STAINED GLASS.

Gravesend.—A stained glass window has jus been fixed at Christ Church, Gravesend, in memory of the late Rev. Charles Hind, B.A. The subjects selected are full-length figures of SS. Peter and Paul, with an angel above bearing a scroll. The effect is said to be most satisfactory. Messrs. Mathews and Cobham (late with Messrs. Clayton and Bell) of Great College-street, Camden-town, and Gravesend, executed the work.

Weston.—Two windows have been placed in the chancel of the parish church at Weston, near Otley, by Mrs. Dawson, of Weston Hall, as a memorial of her late husband. The subject represents the Holy Apostles and Evangelists. The windows have been painted by Burkhart, of Munich

Dunfermline—Memorial Window.—A window in stained glass, designed and executed by Messrs. Ballantine, George-street, Edinburgh, has just been placed in the ancient Abbey of Dunfermline by Mrs. Chalmers, as a memorial of her late husband, the Rev. Dr. Chalmers, of that church. In the centre is a representation of the Women at The Grave, and underneath a medallion containing a likeness of Dr. Chalmers. The window occupies a central position in the south aisle.

The Lacy Memorial at Newark.—A very beautiful stained glass window has, during the past week, been placed in the parish church in memory of the late J. P. Lacy, Esq. The work was entrusted to Messrs. Hardman and Co., of Birmingham, and has been carried out by them, under the superintendence of Mr. Wm. Bliss Sanders, architect, of Nottingham. The glass harmonises in general treatment with the architectural character of the window, and with glass of the corresponding period, *i.e.*, the fifteenth century. The various groups are placed under rich crocketed canopies, those of the two centre lights (which contain the most important subject of the window) being carried through the numerous openings in the tracery surmounting them to the summit of the window. The other parts of the window are filled with conventional foliage. The window contains in all six lights. The subject occupying the two centre lights is the "Agony in the Garden." Dexter light, Our Blessed Lord healing S. Peter's mother-in-law; the adjoining light, the healing of a woman with an issue of blood. Sinister light, healing the blind man; the adjoining light, the healing of the centurion's servant.

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St. John's Roman Catholic Church, Gravesend, is at present undergoing extensive alterations, both internally and externally. Mr. Blake, builder, of Gravesend, is carrying out the work.

Richard Glover and Mary Ann Morel have won the two prizes offered by the promoters of the Alexandra Park and Palace scheme for the best essays on the means of making this institution a place of improving play to the toiling population of North London.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

RECEIVED.—R. T., T. C., jun., R. W., jun., L. and H., G. P., R. G. and Co., J. R. W., W. G., Surveyor, J. E., D. E. F., C. B. A., E. W., W. B., J. V. and Co., Rev. E. R., Art, W. T. D., H. Son and P., W. J. and Co., J. C. J., J. A. C., E. W., L. F., Entasis.

ONE IN A FIX.—See back numbers.

ALBERT LEWIS.—A notice of the Albert Dürer engravings such as that suggested in Mr. Lockwood's letter last week will be given with our next engraving.

J. RUSSELL WALKER.—We cannot supply Albert Dürer independent of the BUILDING NEWS. Possibly they may be published after, in a separate form. See answer to Albert Lewis, above.

ERRATUM.—In last week's BUILDING NEWS, under the head "Building Intelligence," the paragraph headed "York," and referring to the restoration of S. Petrock's Church, should have been headed "Exeter."

ALBERT DURER.—The rev. gentleman who favoured us with the loan of Dürer's "Christ Taking Leave of His Mother," given by us three weeks since, says, in a letter, "The print, in its present state, is worth full £25." We gave it to our readers for about a halfpenny!

MR. A. J. LACEY, of Princess'-street, Norwich, joins in the chorus of admiration of the Dürer engravings.

"ANOTHER" MEMBER OF THE ARCHITECTURAL ASSOCIATION."—There is no doubt that the verdict is gone in favour of the Dürer drawings, and particularly if explanatory notes be given at the same time. You see we *are* giving "details of construction" in the Viollet le Duc series, which will be found, as we promised, to be one of the most valuable series ever presented to British architectural students.

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Correspondence.

ARCHITECTS' CHARGES.

To the Editor of the BUILDING NEWS.

SIR,—I shall be glad if any of your readers can inform me what per-centage an architect is legally entitled to under the following circumstance:—A client of mine obtained from me the necessary designs, working drawings, details, and specifications for erecting two villas. The contract was let to a builder, and one third of the work was actually executed under my superintendence. The builder failed, and the work was suspended for nearly a year and a half, at the end of which period, my client requested me to furnish my account. The agreement between us is the scale of the Institute of British Architects, which was handed to my client before the works were commenced. This scale is unfortunately silent as to cases like the above, and as to many others which constantly occur in practice.

I rendered an account, claiming the full 5 per cent., but adding a note to the effect "that I am ready and willing to do all that can be required of me in completing the work whenever it suits my client to proceed." He has at all times announced his intention to proceed sooner or later, and has never made the slightest complaint; indeed, on the contrary, has stated that he was perfectly satisfied. He has been released from the contract with the builder on advantageous terms, and he has the needful funds at command to complete the work if he pleases; but he stoutly demurs to my claim and referred me to his solicitor. Under the advice of that worthy, he employs a quantity surveyor to measure the work actually executed, with the view to tendering me the per-centage thereon.

The quantity surveyor is also instructed to prepare plans, &c., for completing the houses as originally designed (clever quantity surveyor! whose motto must be "*ex pede Herculem*"), but he is not to avail himself of those in existence in my office, but to reproduce them with the aid of the work partially executed.

I am told that cases such as the above have frequently arisen, and have been decided in courts of law, notably one connected with an hotel in Brighton. My solicitor wants to know the names of such cases, and no doubt some of your correspondents can give them to AN ILL-USED ARCHITECT.

S. PAUL'S CATHEDRAL ORGAN.

SIR,—I must dissent from the opinion of the writer of the article on this subject. I believe that if the ideas of Wren had been unfettered, the organ would never have been placed on the screen as originally, but have been put in some other less obstructive position, or divided, as it is intended to be, so as to allow a clear and unobstructed view of the interior from west to east. Acoustically, the arrangement proposed will, I think, be an improvement, as other instances prove where it has been adopted; while, architecturally, the effect cannot be questioned, as it is a manifest impropriety to destroy the length of a building by an organ, however beautiful or effective in itself. To place such an instrument in such a central position is, moreover, an illogical arrangement, as no building is, or should be, designed for the organ or its case, but, contrariwise, such an accessory should be adapted to the structure.—I am, &c., G. HUSKISSON GUILLAUME.

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Intercommunication.

QUESTIONS.

[2183.]—**Warming and Ventilation.**—What is the latest good treatise on these questions?—A. CUSHING.

[2184.]—**The Cymagraph.**—Information where to obtain the above, and the price, would oblige. This question has been asked at various times by different subscribers, but I am not aware of any answer ever appearing.—A. L.

[2185.]—**Boundaries of Soho.**—Would one of your readers define the boundaries of the district known as "Soho," and state authority?—CHARLES BUSSELL, 26, Soho-square.

[2186.]—**Mortar.**—On page 494 of your last volume, reference is made to "the main results of certain recent experiments made to obtain accurate information as to the process of the hardening of lime and mortar," &c. Where are the reports of these experiments to be found, and of what was the mortar composed?—A SPECULATING BUILDER.

[2187.]—**Pocket Gauges.**—Will any of your readers kindly tell me if they know of there being made any pocket gauges for testing weight and thickness of milled lead, zinc, &c., similar to those used for gauging wire?—FRANK.

[2188.]—**Measuring Cement.**—I should feel obliged if you will give me, in the next number of the BUILDING NEWS, the number of square inches in a bushel for measuring cement?—A SUBSCRIBER.

[2189.]—**Moss on Stucco.**—Gray lime stucco on outside of buildings is generally discoloured by a species of moss. Can any of your readers inform me of any way of destroying this moss without injury to the face of the work? Sulphuric acid has been tried in vain, as, after painting, the moss soon reappeared. Could any compound of magnesium, which destroys vegetation, be used with effect, and, if so, how applied?—Yours, &c., FAREHAM.

REPLIES.

[2173.]—**Measurement of Masonry.**—It is usual to measure the stone full size in the work, in the same manner as taking out quantities.—W. R. A., Uckfield.

[2175.]—**Cutting Holes in Glass.**—Holes can be cut in glass, to form glass slates, with a diamond drill and sweet oil.—W. R. A.

[2181.]—**Stain on Slates.**—Can be removed by a weak solution of muriatic acid.—W. R. A.

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LEGAL INTELLIGENCE.

THE PURIFICATION OF RIVERS.—In the Court of Chancery, on Monday week, before the Lords Justices, the case of the Attorney-General *v.* the Merthyr Tydvil Local Board of Health was heard. The question raised was whether a sequestration should be enforced against the defendants for breach of an injunction granted some time since, to restrain them from pouring sewage into the river Taff, so as to be a nuisance to the relators. The sequestration has been from time to time suspended, and the matter was referred by the Court to Mr. Bailey Denton, to report what the defendants ought to do to obviate the nuisance. Mr. Bailey Denton has now reported that the works which he considers necessary have not been executed, and that what the defendants have done is insufficient. The matter accordingly came before the Court again. Their lordships granted a further sequestration on the terms that the defendants are, under the direction of Mr. Bailey Denton, to carry out the works which he considers necessary, and that they are also to pay the full costs, as between solicitor and client, of the different applications which have been made to the Court as to the sequestration.

IMPORTANT TO CONTRACTORS.—In the Westminster County Court on Thursday, before F. Bayley, Esq., an action was brought by a builder and carpenter, named William Riviere, carrying on rather an extensive business in Bedfordbury, and describing himself as a contractor, against Mrs. Annie Roberts, proprietress of the Royal Hotel, Haymarket, to recover the sum of £17 for work and labour done.—Mr. R. K. Bartlett, solicitor, was for the plaintiff, and Mr. Mitchelmore for the defendant. From plaintiff's statement it appeared that he contracted with defendant in the early part of the year to put the premises occupied by defendant in thorough repair for the sum claimed, which having done he sent in his bill, which she refusing to pay he took these proceedings.—Mr. Mitchelmore, in reply, said the conduct of his client must certainly appear strange, if plaintiff's story was true, which he should prove it was not. He certainly undertook to do the work by contract, but instead of doing so in a proper manner, he so damaged the top apartments as to render them untenantable, and it would cost many pounds to put them right, which was the reason of payment being refused, and he would now call defendant.—Annie Brown deposed that she was landlady of the hotel in question, and plaintiff, as he said, contracted to put it in thorough repair. Having professed to do so, she discovered that the rain penetrated both attics, entirely spoiling the paper and damaging the walls therein, as well as those of the rooms underneath. She thereupon would not pay him unless he completed his work properly, which refusing to do unless he was paid further amounts, she allowed herself to be summoned.—Mr. John Brown, 5, Woburn-place, Burton-crescent, a practical surveyor for above forty years, had examined the hotel at defendant's request, and said that the work, if properly done, would have been worth the amount charged, but it would cost many pounds to put it right.—This evidence being corroborated, his Honour observed that it was evident plaintiff had not fulfilled his contract, and his decision was against him. Judgment for defendant, and all costs.

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Our Office Table.

HARBOUR OF REFUGE, JERSEY.—A Bill was passed on Friday last by the Jersey States for the construction of a harbour of refuge at that island, chiefly for the accommodation of steam-packet traffic. Strong opposition was raised by the party in favour of a harbour at Noirmont, on the west side of St. Aubin's Bay. The plan selected is that of Mr. Coode, and includes a landing-stage on the east side and breakwater on the west side of the small roads. The cost of the works will be £254,000.

AN IMITATOR OF MR. PEABODY.—We hear that a gentleman whose name has not yet been announced is about to emulate the generous deeds of the late Mr. Peabody. He intends to expend £30,000 for the erection of a lunatic asylum for the benefit of the middle lower class, which will be done at once. In addition, he is prepared to devote for public and useful purposes a sum equal to that given by Mr. Peabody, so soon as he can satisfy himself as to the best means of effecting this so as to do the greatest public good, and to avoid the risk of pauperising classes who might not in their present position be eligible recipients, in public opinion, for such a gift.

WATER WORKS SHARES.—A financial contemporary says:—"All well-managed water companies, whose engineers have made available the experience of the present day, possess property which should become yearly more valuable. No corporation or populous district should be without their own waterworks, and there are few classes of local investments which are more safe."

GEORGE MORLAND'S PICTURES IN WHITECROSS-STREET PRISON.—We understand that Mr. George Ellis has succeeded in saving the most important portions of the two pastoral scenes painted by Morland on one of the walls of Whitecross-street Prison while under confinement there for debt. This prison is now a thing of the past, and its site is in ruins. The preservation of these interesting relics was a work of no ordinary difficulty, as they had to be cut out of the solid brickwork from walls of immense thickness, added to which the dry and brittle nature of the surface rendered the operation very hazardous.

CLEVELAND IRON ORES.—The *Railway News* understands that some very important discoveries have recently been made in the treatment of the iron ores of the Cleveland district. By the use of a composition, which is stated to be very inexpensive in its character, the sulphur and phosphorus are got rid of, and iron of a very fine quality is obtained from the ores. The process has been tested in every possible way during the last three months at Palmer's shipbuilding works on the Tyne, and with the most satisfactory results.

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A school-room, with necessary vestries, &c., will shortly be erected in connection with the Mostyn-road Wesleyan Chapel, Brixton.

Astley's Royal Amphitheatre was submitted for sale by auction by Messrs. Driver on Tuesday week. The highest bid was £10,000, which did not come up to the reserve price, and consequently the property was bought in

Chips.

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A temporary iron church, capable of accommodating 200 persons, has been erected, at a cost of £200, by the Surrey Church Building Association, at the end of Hamilton-road, Lower Norwood. The interior walls and the benches are constructed of stained deal.

The laying of the foundation stone of the East London Tabernacle, Bow (a Baptist place of worship), will take place on Good Friday.

The Metropolitan Board of Works has, at the solicitation of the Lambeth Vestry, inserted a clause in the proposed new Building Act, making it a penal offence to stencil on pavements.

A site has just been secured for the erection of the church of S. Philip the Evangelist, Old Kent-road.

The laying of a double line of street tramways has been commenced at the Elephant and Castle end of the Walworth-road. The line will extend to Camberwell, and ultimately to Peckham, joining the Pimlico, Peckham, and Greenwich line. The roadway between and on either side of the lines is being paved with the Val de Travers asphalte.

The monument erected to Ernest Jones in the cemetery at Ardwick, Manchester, will be uncovered on Saturday.

Plans are in preparation for the erection of new schools in connection with the church of S. John the Evangelist, Bromley-road, Accrington, at an estimated cost of £1,500. The architect is Mr. William S. Varley, Blackburn.

The death is announced of Mr. William Bennett, landscape painter and member of the Institute of Painters in Water Colours. He was sixty years of age.

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Timber Trade Review.

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Prices, April 4.—Per Petersburg standard—Archangel yellow, £12 10s. to £14 10s.; ditto seconds, £9 10s. to £10 5s.; Petersburg yellow, £13 to £13 10s.; Wyburg yellow, £9 15s. to £10 10s.; Finland and haudsawu Swedish, £7 5s. to £8 5s.; Petersburg and Riga Whitewood, £8 15s. to £9 10s.; Christiana deals, best sorts, yellow and white, £10 to £12 10s.; Norway deals, other sorts, £7 to £8 5s.; ditto battens, all sorts, £5 10s. to £7 5s.; Swedish and Gothenburg good stocks, £10 to £11; ditto common and thirds, £8 15s. to £9 15s.; Gefle and best Swedish deals, £10 10s. to £12 15s.; Swedish battens, £8 10s. to £10 10s.; pitch pine, £12 10s. Timber per load—Riga, £3 5s. to £3 10s.; Dantzig and memel crown, £4 to £4 10s.; ditto best middling £3 10s. to £4; ditto good middling and seconds, £3 3s. to £3 7s.; ditto common middling, £2 12s. to £3; ditto undersized, £2 12s. to £3 2s., ditto small, short, and irregular, £2 5s. to £2 15s.; Stetlin, £2 15s. to £3; ditto small, £2 5s. to £2 10s.; Swedish and Norway balks, £1 12s. to £1 18s.; Quebec deals, per St. Petersburg standard, first floated, £16 to £17 10s.; ditto seconds, £12 10s.; ditto thirds, £9 to £9 5s.; ditto first bright, £18 to £19 10s.; ditto seconds, £12 15s. to £13 10s.; ditto third, £8 15s. to £9 10s.

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Trade News.

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WAGES MOVEMENT.

Alloa.—A fortnight ago we stated that the operative joiners of Alloa came out on strike on being refused an advance of ½d. per hour on their wages. The dispute has been compromised by the men agreeing to accept ¼d. per hour additional, and yesterday they resumed work. A new set of by-laws, to be hung up in each workshop, has been drawn up and printed, and will be mutually signed by employers and employed.

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TENDERS.

Bream.—For improvements to an inn at Bream, Gloucestershire. Quantities supplied:—

Jones	£570	15	0
Morse	550	13	0
Meredith	543	10	0
Orgau and Bennett	485	10	0
Kear	445	0	0
Heath, Simmonds, aud Adams	430	0	0
Dobbs	425	0	0

Hereford.—For shops, &c., Hereford. Mr. G. Smith, architect, Ross. Quantities supplied:—

Stephenson	£2193	0	0
Meredith	2836	6	1
King and Godwin	2800	0	0
Lee and Watkius	2750	0	0
Welsh and Sons	2625	0	0
Bowers	2500	0	0
Moreland (too late)	2497	0	0

Horsham.—Fer the erection of new tower and spire, and rebuilding the south aisle of S. Mark's Church, Horsham. Messrs. Habershon and Brock, architects:—

Manley and Rogers	£4011	0	0
Scrivener and White	3930	0	0
Sharp, Bros.	3792	0	0
Carter and Son	3566	0	0
Perry and Co.	3421	0	0
Newman and Mauu	3325	0	0
Rowland	3321	5	0
Shearburn	3078	0	0

Over Darwen.—For drainers', excavators', masons', bricklayers', and flaggers' work for a villa at Over Darwen. William S. Varley, Esq., Blackburn, architect. Quantities supplied:—

Broughton ane Ashworth	£961	5	0
Eccles and Sons	900	0	0
Knowles (accepted)	884	10	0

Carpenters' and Joiners' Work.

Kay	£548	10	0
Entwistle	480	0	0
Whittle	478	10	0
Abbott	460	0	0
Townend (accepted)	440	0	0

Lincoln.—For the restoration of the church of St. Mary-le-Wigford. Mr. Bayley, architect, Nottingham:—

Messrs. Vickers	£1385	0	0
Huddleston	1159	0	0
Messrs. Otter and Binns	1124	7	6
Slingsby	1080	0	0
Johnson	1055	0	0
Messrs. Barker and Smith	921	0	0
Youug (accepted)	878	0	0

London.—For alterations at 23, Finsbury-place, City for Dr. Crosby. Mr. J. H. Rowley, architect:—

Parrett	£359
Sharpington and Cole	280
Scriveuer and White	251
Snowdon (accepted)	224

North Wales.—For the erection of a villa for T. E Hortou, Esq. Mr. Joseph Fogerty, architect, 1, Westminster-chambers, S.W.:—

Moyers	£5350	0	0
Cockburn and Son	5200	0	0
A. and W. Roberts	5087	10	9
Treasure and Son	4916	17	11
Roberts	4389	6	4
Haigh and Co.	4295	0	0
C. N. Foster (accepted)	4020	0	0

Pentonville.—For new parish schools, S. James's, Pentonville. Messrs. Habershon and Brock, architects:—

Wood	£956

Radnorshire.—For the erection of school, and residence attached, for the parish of Llandegley (exclusive of haulage, fencing, or offices). Mr. E. H. Lingen-Barker, architect:—

Williams and Jones	£365
Potter	348
Hamer, Bros.	325
Ingram and Jones (accepted)	324
Evans	230

Romford.—For the erection of a dwelling house in Westeru-road, for Mr. David March. Architect, Mr. E. C Allam. Quantities supplied:—

Black	£548
Davey	546
Hinds	510
White (accepted)	495

Shropshire.—For the erection of schools at Prior's Lee, for Earl Granville and others. Mr. Joseph Fogerty, architect, 1, Westminster-chambers, S.W.:—

Marrion	£1683	7	2
Millington	1535	3	2
Yates	1453	7	0
Nevett	1387	0	0
Cobb (accepted)	1296	0	0

St. Neots.—For the erection of dwelling-house and offices at Wintringham Hall, for Mr. Thomas Day. Mr. John Usher, architect:—

Henry Field	£2460
B. Nightingale	2427
L. B. Moore	2366
E. Twelvetrees	2260
Pattinson, S.W.	2200
Hutchinson, W.	2189
S. Foster	2166
Henry Young	2149
Brown and Withey	2028
Charles Lord	1990
Hobson and Taylor	1987
Edey and Weldman	1771

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BATH AND OTHER BUILDING STONES OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,

Quarrymen and Stone Merchants.

List of prices at the Quarries and Depôts, also cost of transit to any part of the United Kingdom furnished on application to

Bath Stone Office,
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TO ARCHITECTS.

GREEN ROOFING-SLATES.

As supplied to H.R.H. The Prince of Wales at Sandringham.

The Penmoyle Sea-green Slates are specially adapted for Churches, Public Buildings, &c., &c.

(*Less costly than ordinary Gothic Tiling.*)

These durable and non-absorbent Slates can be obtained in sizes suitable for Gothic Architecture, at prices as under.

In Railway Trucks, Docks, Gloucester:—

			Per 1,200 Slates.			Equivalent to per square
Best Green Slates		14 by 7	2	17	6	16s. 6d.
Do.	do.	13 by 8	2	17	6	16s. 6d.
Do.	do.	13 by 7	2	5	0	14s.
Do.	do.	12 by 7	1	18	6	13s.
Do.	do.	12 by 6	1	7	6	11s.

Prices of large Sizes, Cost of Transit, Reference Testimonials, and Sample Specimens may be obtained on application to

MESSRS. RANDELL & CO., Corsham, Wilts.

Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street, Westminster.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

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METALS.

Lead:

Pig—Foreign	per ton	£17	17	6	£18	0	0
„ English W.B.	do	19	15	0	20	0	0
„ Lead Co.	do	19	0	0	00	0	0
„ Other brauds	do	18	7	6	18	10	0
Sheet Milled	do	18	10	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry.	do	27	0	0	0	0	0
„ ground in oil	do	0	0	0	0	0	0

Copper.

British—Cake & Ingot	per ton	72	0	0	00	0	0
Best Selected	do	74	0	0	0	0	0
Sheet	do	74	0	0	77	0	0
Bottoms	do	79	0	0	00	0	0
Australian	do	71	0	0	74	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	10	0	65	10	0
„ Refined ingot	do	71	0	0	73	0	0
Yellow Metal	per lb.	0	0	6½	0	0	7¼

Iron.

Pig in Scotland, cash	per ton	2	14	4	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
„ Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	15	0	7	0	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	7	6	7	15	0
Swedish	do	9	15	0	10	0	0

Timber.

Teak	load	12	0	0	13	0	0
Quebec, red pine	„	3	15	0	4	15	0
„ yellow pine	„	4	5	0	5	5	0
St. John N.B. yellow	„	0	0	0	0	0	0
Quebec oak, white	„	6	0	0	6	5	0
„ birch	„	3	15	0	5	0	0
„ elm	„	4	0	0	4	10	0
Dantzic oak	„	5	5	0	6	10	0
„ fir	„	2	10	0	4	10	0
Memel fir	„	3	0	0	4	0	0
Riga	„	3	5	0	3	10	0
Swedish	„	2	5	0	2	15	0
Masts, Quebec red pine	„	4	0	0	6	5	0
„ yellow pine	„	4	0	0	6	5	0
Lathwood, Dantzic, fm.	„	3	0	0	5	0	0
„ St. Petersburg	„	5	0	0	5	10	0
Deals, per C., 12ft. by 3 by 9in.,							
Quebec, white spruce	„	12	0	0	17	10	0
St. John, white spruce	„	12	10	0	14	0	0
Yellow pine, pr reduced C							
Canada, 1st quality	„	18	0	0	19	10	0
„ 2nd do	„	12	15	0	13	10	0
Archangel, yellow	„	11	10	0	14	10	0
St. Petersburg, yellow	„	13	0	0	13	10	0
Finland	„	7	0	0	8	0	0
Memel	„	0	0	0	0	0	0
Gothenburg, yellow	„	8	10	0	10	10	0
„ white	„	8	10	0	9	10	0
Gefle, yellow	„	10	10	0	12	10	0
Soderham	„	8	10	0	12	0	0
Christiania, per C., 12ft. by 3 by 9in., yellow	„	10	0	0	12	10	0
Flooring boards, pr square of 1in., first yellow	„	0	7	6	0	10	6
First white	„	0	7	0	0	9	6
Second qualities	„	0	6	0	0	7	0

Oils, &c.

Seal, pale	per tun	37	10	0	0	0	0
Sperm body	„	83	0	0	84	0	0
Cod	„	35	10	0	0	0	0
Whale, South Sea, pale	„	36	0	0	37	0	0
Olive, Gallipoli	„	49	0	0	0	0	0
Cocoanut, Cochin, tun	„	48	0	0	48	10	0
Palm, fine	„	38	0	0	0	0	0
Linseed	„	32	0	0	32	5	0
Rapeseed, Eng. pale	„	45	0	0	0	0	0
Cottonseed	„	27	10	0	32	0	0

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BANKRUPTS.

TO SURRENDER IN LONDON.

Abbot, James Arthur, St. Paul's-road, Highbury, contractor, April 18, at 11.—Keene, Frederick, Walworth-road, late builder, April 21, at 11.—Mitchell, William Henry, Chippenham-road, Harrow-road, builder, April 18, at 12.

TO SURRENDER IN THE COUNTRY.

Sidey, George, Ealing, April 14, at New Brentford.—Chappell, William, Upper Beeding, builder, April 18, at Brighton.—Davis, William, late of Small Heath, near Birmingham, and Acock's-green, builder and brick-April 17, at Birmingham.

PUBLIC EXAMINATIONS.

April 14, L. Richardson, Shillington, Beds, builder.—April 26, T. Poolly, Maidstone, lime merchant.—April 24, G. Culshaw, Southport, builder.

PARTNERSHIPS DISSOLVED.

Dowling and Walsh, Facit, near Rochdale, contractors.—Emmott and Dewhurst, Wine Wall Quarry, near Colne, quarrymen.—Ashton and Co., Newton-heath and Mirfield, joiners.—Wolstenholm and Co., Blackburn, joiners.—Parry and Son, Salford, joiners.—Robert and Co., Low Moor, and elsewhere, stonemasons.—Dalby and Son, Banbury, timber and slate merchants.—W. B. and V. Stewart, Scarborough, architects.—Roden and Owen, Bridgenorth, brass and iron founders.—Cook and Son, Walworth-road, bricklayers.

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Breakfast.—Epps's Cocoa.—Grateful and Comforting.—The very agreeable character of this preparation has rendered it a general favourite. The "Civil Service Gazette" remarks:—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast table with a delicately-flavoured beverage, which may save us many heavy doctors' bills." Each packet is labelled—James Epps and Co., Homœopathic Chemists, London.

THE BUILDING NEWS.

LONDON, FRIDAY, APRIL 14, 1871.

NEW EMBANKMENT FROM BATTERSEA TO CHELSEA.

TIDES are the enemies of commerce. Hence it follows that one of the principal objects of the improvement of rivers and all navigable bodies of water, is to annihilate, or rather to nullify, the effects of tidal action. Except in those seas (such as the Baltic and the Mediterranean) which may almost be termed tideless, so very small is the range of the varying water level, some artificial provision must be made to meet the regular alterations in depth, if the traffic is to be developed to its fullest extent. But at present we are not concerned with the commercial or utilitarian view of the subject, although the end to be attained is the same. The action of tides is destructive of the picturesque. What can be more agreeable to the sight than the prospect of a fine harbour or river at high water, crowded with vessels, freighted with the products of every country and nation? Look at the same spot when the tide is out, the vessels stranded, some heeling half over, the muddy bottom, the slimy piles and timbers, and the general aspect of neglect and desertion that pervades the whole place. This desirable elimination of the tidal action may be effected in two ways, either by dredging out the foreshore so as to permit the water to reach the required spot, or by pushing out a wall, pier, or jetty to reach the water. But, whether we regard the subject in a utilitarian or ornamental light, it will be found that the end proposed is identical. Sometimes a combination of the two methods is employed. A wall may be built out a certain distance on to the foreshore, and the ground excavated or dredged to a certain depth in front of it. The difficulty attending the dredging of navigable channels is, that when once commenced, the task is interminable. In fact, it becomes a constant charge upon the receipts of the traffic, and may be put under the head of "maintenance of way" with quite as much truth as with which that important item figures in railway statistics.

The embankments of the Thames may be considered both an example and an exception to the statement we have laid down. Insomuch as they have accomplished the removal of a large number of wharfs, they have to some extent tended to discourage local commercial dealings; but, on the other hand, the construction of roads and gardens on the embanked foreshore is a proof of the change that has been effected in the lateral range of the tide. The object of the metropolitan river walls may be briefly stated to be the joint improvement of land and water. In this respect much has been already done; more will shortly commence to be done; and ultimately it is to be hoped the embankment of the Thames will be carried out in its entirety. The portion which now claims our attention is that which will speedily be taken in hand, the contract having been let. It extends from Battersea-bridge to Chelsea Hospital, where it joins the existing wall; the total distance is a trifle over three-quarters of a mile. The demolition of property, and the consequent compensation, will not bear any proportion to that incurred in the case of those parts of the embankment situated nearer the centre of London. At the Battersea end the greatest amount of demolition will occur, and those who are acquainted with that locality will undoubtedly say, "the more demolition the better." There is only one possible objection that can be raised against the destruction of all property of a description that is, without the slightest doubt, utterly unfit for human habitations. Fit or unfit, people do live in them, and it is neither just nor reasonable to evict them wholesale without providing them house-room elsewhere. Our readers scarcely require to be reminded of a prominent example of the evil effects of extensive demolition of property that appeared in our daily contemporaries of last week. Leaving Battersea, and following the line of the intended embankment wall, the plan of the proposed work shows that several wharfs in the neighbourhood of Chelsea Botanical Gardens will be interfered with, and the interests of the proprietors will have to be taken into account in the matter of compensation. Without wishing to prejudice the claims of owners of riparian premises, or to deny that a strong case might be made out for an exception, we are disposed to assert that, solely *pro bono publico*, there should not be a single wharf on the up-stream side of London-bridge. To adduce our arguments on this point would carry us wide of our present subject, but the gradual and successive removal of the wharfs higher up the river is an unmistakeable corroboration of the correctness of our views. Among other collateral improvements which will be contingent upon the construction of the new wall, will be the removal of the wretched old landing-places called Chelsea and Cadogan piers, and the substitution of others, built on the iron pontoon principle. *Apropos* to the question of our piers, it may be remarked that the new ones are not, to use a common expression, "up to the mark." Already they are dirty and mean looking, and are sadly in want of two or three coats of good paint. Perhaps, after all, they are quite good enough for the boats that come alongside.

Let us now take a glance at the actual works of construction that have to be executed in accordance with the designs of the engineer to the Board of Works. In the first place, there is the river wall itself, which will not present any particular difference in mere contour from that of those already built. Several of the details, however, vary considerably, and deserve a passing notice. Concrete backing and granite facing will be common to all, but the dressing of the face stones in the new Chelsea Embankment wall will be of a more elaborate character than that previously adopted. Instead of plain smooth ashlar work, the surface of the stones will be "rusticated." The general appearance of this is very good, and the parapet is superior in design to the other existing examples. Concrete blocks are employed in parts of the foundation, although the particular value to be derived from them is not by any means apparent. As the wall is situated wholly within the line of low-water mark, the principal part of the contractor's work will be of the nature termed tidal, and there will be no necessity for the heavy dams used in the construction of the walls lower down the stream. Should circumstances be favourable, the wall will not give much trouble in building, but the case will be otherwise with the sewers. These consist of a principal low level sewer, and the various branches required to effect the thorough drainage of the district. Some of these are situated over thirty feet below the surface of the intended roadway, and tunnelling will have to be resorted to for a considerable length. Should water be met with, which is almost a certainty, bearing in mind that the site of the main sewer is on the foreshore of the river, this part of the work will be the nut to crack. Pumping makes a terrible hole in an estimate, and is, moreover, an exceedingly awkward item to provide for in anticipation. The drains are partly of the barrel and partly of the oval form, and will be built of brickwork set in cement. In addition, there are penstocks, chambers, entrances, descents, manholes, ventilating shafts, and the usual addenda to all sewage and drainage works, to be executed. So far as the population of London is concerned, the real benefit to it is comprised in this portion of the undertaking, although the other features of it are not to be undervalued. These consist of the formation of a roadway, and of several ornamental plots of ground, similar to those in process of laying out in the vicinity of Westminster, Charing-cross, and Waterloo bridges, This road will be of great convenience to all those living out in the direction of Battersea, as it will obviate the necessity of making the détour by Queen's-road, and afford them a straight thoroughfare to Chelsea-bridge and Grosvenor-road. Summing up the advantages that are to accrue to the inhabitants of Battersea and Chelsea in particular, and to Londoners in general, from the proposed new embankment wall, they comprise an improvement in the river, increased facilities for land locomotion, and a permanent system of local drainage and sewerage, which constitutes one of the vital features in the hygiene of every great city. Considered as a whole, the Chelsea Embankment will, when completed, add another item to the list of those important public works which alike benefit and adorn our metropolis.

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VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."*

V.

THE importance of the Norman conquest has not, we think, received sufficient consideration at the hands of M. le Duc. The spirit of organisation existing in these semi-civilised Northmen is hardly sufficiently recognised. How great that was we English know by the effect their conquest of this country had, and that this organisation was not a rigid preconceived rule, but a receptive, absorbent feeling, is manifest by their adoption of many Saxon, and to them foreign elements, when the two phases of civilisation met and amalgamated in this country. The same receptiveness of their character is strongly marked in existing evidences of their occupation of the Sicily and Apulia, where the Saracenic forms of art were at once adopted by the new-comers, and whence came to their newly-found motherland a new influx of Oriental feeling. Impinging upon the already settled Orientalism existing in central France, we have before indicated, a new sense of vitality was thus given to architecture. The minarets of Eastern mosques grew into towers and spires, and a strong trace of Eastern birth is visible in all the decorative accessories of the edifices of Norman France erected at this period, and which spread thence into our own country. Nor is this evidence of Orientalism marked only by the presence of decorative features; the absence of certain forms is equally indicative. Rarely in Norman architecture do we see statuary introduced, and its first introduction is like the first steps of this art in all countries—feeble and constrained. The vestments are swaddling-clothes, restricting rather than indicating motion. The narrow folds of the drapery follow closely the enveloped form, and we can trace in Mediæval sculpture the same progress of internal growth that we find in the self-recorded history of this branch of art in India, in Egypt, or in Greece. Sculpture was too delicate a plant to bear transportation and transplantation, but from those sources whence, in our opinion, European art in the birth of the Middle Ages was drawn, it, from religious causes, had no existence. The Koran, adopting literally the law of Moses, forbade it; but when ritual laws against it were not imposed, the human craving for the creation of this highest form of beauty caused its culture, and necessarily this demand produced a supply, and the growth of that supply followed the same natural laws as in other countries. But we must resume our review of M. le Duc's estimable work. He notes how that "during the twelfth century the Domaine Royale—the heart of France in M. le Duc's eyes, for there lies Paris—was shut in by foreign foes; how that it isolated itself from foreign influences, and how thus this isolation fostered the growth of a new school, the which grew up strong in its nursery, and which, when this portion of the country was strong enough to march forth, impressed itself on those districts from whence it expelled, or where it incorporated into itself, its foreign foes. It is during the last years of the twelfth century, and in those which formed the commencement of the thirteenth, that all the grand cathedrals of the Domaine Royale were founded, and almost entirely finished according to these new plans. Notre Dame at Paris, Notre Dame at Chartres, the cathedrals of Bourges, Laon, Soissons, Meaux, Noyon, Amiens, Rouen, and Cambrai, Arras, Tours, Secz, Coutances, and Bayeux were commenced under the reign of Philip Augustus, and almost all finished before the thirteenth century came to a close. Champagne, so closely allied, politically speaking, to the Domaine Royale under Saint Louis, raised on its side the grand cathedrals of Reims, Chalons, and Troyes. Burgundy and the Bourbonnaise followed the new direction imprinted on architecture, and built the cathedrals of Auxerre, Nevers, and Lyons. As to Carcassone, making a detached portion of the Domaine Royal, it received and solely adopted the *official* architecture of the time, notwithstanding, that up to the fifteenth century it remained surrounded by those countries, which still followed the indirect traditions of the Roman rule. Guyenne, which was part of the appanage of the English crown until the time of Charles V., and Provence, which did not become French until that of Louis XI., were not penetrated by the new style, or where it did find its way it produced but sorry imitations, foreign to the spirit of the country in which they found themselves placed. In Brittany the new style developed itself somewhat slowly, and always preserved a character which belonged rather to England than to that of Normandy and Maine.

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* Dictionnaire raisonné de l'architecture Française du XI. au XVI. Siecle, par M. Viollet le Duc, architecte du Gouvernment, Inspecteur-géneral des Edifices Diocesains. 10 vols.; 8vo.; Morel, Paris, 1854—1868.

"Round these newly erected cathedrals sprang up the episcopal residences and palaces, chateaux, and a thousand other edifices impressed with the new phase of art. Taking their type from the mother monument, and being children of the same family, the accidental peculiarity impressed upon the principal building by the configuration of the site, the local requirements of the place or the taste of the artist who designed it, was repeated in the secondary edifices even where they were not induced by necessity. "The most striking feature in this new system of architecture, which was adopted at the end of the twelfth century, is its entire emancipation from Roman tradition. We cannot believe that this emancipation was the result of caprice or disorder; on the contrary, it was a natural result, logical and harmonious. Once the principle acknowledged, the consequence followed with a vigour which admitted no exception. Even the faults of the architecture of this period are derived from the imperious pursuit of this principle."

"In the style of French architecture, which was created in the thirteenth century, the disposition, the construction, the statics, the scale, and the ornamentation differ absolutely from those of the Antique school. They were the consequence of two civilisations based on entirely differing principles." "The Roman monument is a species of modelling on a form which permitted the rapid use of an enormous mass of materials, consequent upon the facility with which a large body of workmen could be obtained. The Romans had at their disposal large armies habituated to public works, and could throw a large slave population upon a building; they therefore adopted a mode of construction convenient to these social conditions. To raise their edifices it was not necessary to have a body of skilled labourers. Some special men to direct the works, a few painters and plasterers, who covered the crude masses with a rich envelope; a few Greek artists to do their carving was all the skilled labour needed, and plenty of brute force sufficed for the rest. Thus, whatever might be the distance from the metropolis to the place where the Romans built their amphitheatres, their baths, their aqueducts, their palaces, or their basilicas, their architecture was the same, and the buildings of the Romans were before all things Roman. In spite of soil or climate, regardless of the nature of the materials or the custom of the inhabitants, they were buildings of the city of Rome, and never the individual work of an artist. From the moment when Rome planted her foot upon a foreign soil, she there reigned supreme, and effaced everything that was strange to her. This was her power; the arts followed the same principle as her politics, and under this crushing influence the individuality of man disappeared. Even Greece—that brilliant home of art and human development, even Greece was extinguished by the breath of Rome. Christianity alone, by giving a sentiment of personality to the individual man, could struggle against this giant, but it took centuries to clear away the remains of Pagan civilisation. We have here, however, only to examine one portion of this grand work of humanity in the middle ages. At the end of the twelfth century all those principles which indicated the final triumph of those ideas which Christianity had given birth to were firmly rooted. The principle of personal responsibility manifested itself, and the individual man counted for something." The arts (thus reflecting the political sentiment of the time) set forth the individual expression of the artists engaged in their execution without destroying the unity of the whole. There was, in fact, unity and variety at the same time—a unity produced by liberty, not tyranny. The architect regulated the height of the capital or the frieze, fixed their projection or outline, but the sculptor could convert this into his own individual art-work; he moved in his own sphere, and he took upon himself the responsibility of his own work; and architecture during the twelfth and thirteenth centuries, whilst submitting to an uniform fashion, and although based upon absolute principles, permitted great latitude in their application. From the commencement of the thirteenth century architecture developed itself according to an entirely new method, thenceforth each part was deduced from another with rigorous exactitude, and it is by changes of method that revolutions of art and science are commenced. Now construction determines the form, piers destined to support several arches divide themselves into clusters of columns, these columns are of greater or less diameter in proportion to the weight they have to bear; they rise directly to the superincumbent arch, and their capitals are proportioned to the work they have to do. The arches are broad or narrow, of one or two orders of voussoirs as may be needful. The walls become useless and completely disappear in the large buildings, where they are replaced by clerestories filled with coloured glass. Every need becomes a motive of decoration—the roofs, the water-spouts, the windows, the means of access to, and circulation round, the different storeys of the building—even the ironwork, the leadwork, the means of heating and ventilating, are not masked as we so frequently find them in the buildings of the sixteenth century, but are boldly confessed, and contribute by their ingenious combination, and by the taste which always presided over their execution, to the richness of the architecture.

In a fine thirteenth century edifice, let it be as rich as you will, there is not a superadded ornament, for each ornament is the consequence of some want fulfilled. "Indeed, so immediately is architecture allied with our history, with the intellectual conquests of our country, to our national character, of which it reproduces the principal traits, its tendencies and directions, that we are at a loss to understand why it is not more known and better appreciated; and we cannot conceive why its study is not prescribed in our schools as the teaching of history." Unfortunately, both in France and in England, architecture has become a dead language, not understanded of the people; indeed, the science of history itself is misunderstood, and our schoolmasters mistake a dull catalogue of dry dates, a list of bloody and useless battles, for the true teaching of history. When this becomes really a study, when the knowledge of the past is looked upon as a guide for the future, then architecture may be expected to receive that attention it merits; the world may perhaps become somewhat wiser, and perhaps the architecture of that blessed time may become a living art, as expressive of modern wants, of modern manners, and modern ideas, as was the architecture of those days when it lived and flourished. The great impetus given to the art of architecture in the thirteenth century, the age of Albertus Magnus, Thomas Aquinas, and Roger Bacon, the age of searchers after wisdom and truth in science and art, the birth-age of many a modern invention in fact or faith, was checked in France by the misfortunes which desolated her in the fourteenth century. During the thirteenth century the architecture of France and England marched side by side, but in the fourteenth their paths diverge, and their ways grow widely separate, yet in both the temptation to perform miracles in science, rather than create beauties in art, led to the destruction of what is called Gothic architecture, and, as might be expected, France felt sooner than we did the influence of the Italian Renaissance of the fifteenth and sixteenth centuries. The architecture, like the manners of the people, changed more rapidly than did our own; our isolated position made us more strongly conservative. These points we shall have to consider more in detail in viewing the various detached portions of M. le Duc's work. We have entered somewhat fully into his sketch of the rise and progress of architecture in France, to show how thoroughly he takes up his subject, how he studies it as an expression of the human mind, and how he reads in it the sentiments, political, moral, and religious, of the men who have left us this legacy of their brain-work, and in our succeeding numbers we shall follow him into the progress and development of religious architecture in France.

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THE GHOSTS IN WESTMINSTER ABBEY.

On Easter Sunday four white marble statues that have been placed in the four large niches of the reredos of Westminster Abbey, were uncovered, and formed the subject of what might be called an inaugural sermon by the Dean. The two next the altar table represent S. Peter and S. Paul, and that to the right of S. Peter, and on the same side of the table, is Moses, and that to the left of S. Paul, and on the same side as that figure, is King David. The dean explained the selection of these figures to be representative of the pillars of the Church, S. Peter and Moses being associated as its law givers, and S. Paul and King David as its exponent preachers, and alluded to the former pair as appropriately placed on, and turned towards, the side of the abbey in which the past statesmen of England have been buried, and to the latter as pointing to the well known Poets' Corner, in which the sweet singer of Israel especially might claim a place. Would that we could consider these statues as admirable is their execution as in their selection. The main and prominent objection to them is the colour of their material, or we should rather say their want of colour, for white marble is in no way suited for the Mediæval class of sculpture.

The general effect of these statues is ghostly in the extreme, standing, as they do, in niches of alabaster, surrounded by the deeply-tinted stone of the abbey.

The principal merit of the reredos was that, following the design of the ancient façade towards the shrine of Edward the Confessor, it harmonised infinitely better with the architecture of the building than any of its more gimcrack modern compeers (such, for instance, as that at Ely) do in the other cathedrals into which they have been introduced. In point of colour, too, until these pale ghosts interfered with it, there was a quiet richness about the alabaster and marbles that was very satisfactory.

It is, however, in the quality of the art-work, if it may be dignified at all by such a name, that this statuary falls so lamentably short. The modelling, like the colour, is altogether out of keeping, and the outlines and attitudes of the figures are ungraceful.

Moses, at a distance, looks like a Lazarus struggling to get out of his graveclothes, and King David's bunchy petticoats are anything but kingly; while S. Peter and S. Paul are simply common-place, and the effect of the arm of the latter is unfortunate from a distance.

The nimbi, also, which crown the heads of these representative saints and apostles, are not, as usually, executed in the same material as the statues, but are thin plates of beaten brass, and have a flimsy and poor appearance.

The sculptor, unable to get the feet of his figures to stand within the circumference of their proper pedestals, has allowed the toes to project, and given himself the unnecessary trouble of putting corbels of white marble to support their projections, and these look like clods of snow that have stuck to their several sandals.

It pains us to have to make these remarks; but, in the interest of truth and of art, it would be wrong to conceal the deliberate opinion which we have formed on the subject. When will Mr. Scott come to understand that it behoves him not to waste the great opportunities which are showered upon him? Upon how many reredoses has he lavished thousands of pounds, without producing, or fostering, anything superior to the ideal of art to be found in the workshops of the New-road?

If we inquire, with a feeling of regret and perhaps of reproach that our painters and sculptors of eminence confine their efforts to easel pictures and statues, having no relation to, or harmony with architecture, whose fault it we shall see that it is that of those architects who have the opportunity of seeking the aid of the greatest artists in the land, and yet deliberately choose to spend the money placed at their disposal in twisted columns and agate balls and such trumpery instead, and entrust to mere decorators and carvers works that ought to be given to Royal Academicians.

It is with sorrow we turn from a contemplation of this reredos of Westminster Abbey, and we would fain forget, if we could, its dollish mosaics and these ghosts, which mutually destroy the little merit that each possesses.

The paintings on the screens of Norfolk, and the polychromatically coloured statues of Cologne Cathedral, might have supplied hints of what was needed in this particular case, and we hope hereafter to see better statues thus treated in these niches of the Westminster reredos; but the drawing and modelling of those which now occupy them are by no means good enough to form the ground-work for any appropriate colouring which might otherwise bring them into harmony with the building. Nothing could ever impart to these feeble modern Classically-treated figures the proper and vigorous character of appropriate Mediæval statues.

Not True, we Trust.—The *West London Advertiser* says:—"Grave doubts prevail with regard to the safety of the Prince Consort Memorial in Hyde Park. The rods are still left—temporarily, we are assured—from cap to cap of the columns across the arches, notwithstanding the comments they excite. Architects and builders say that it will not be safe to remove the ties; some say further that, the structure being insecure. those rods are not sufficient to hold it well together."

THE GLASGOW INSTITUTE OF ARCHITECTS.

THE members of this Institute dined together in the George Hotel, George-square, on Good Friday. Mr. Alexander Thomson, I.A., President, occupied the chair. Mr. Campbell Douglas, I.A., Vice-President, officiated as croupier.

The President, in proposing the toast of the "Glasgow Institute of Architects," delivered the following address:—This institution is still in its infancy, not much more than half through its third year. Of course, its history is correspondingly brief; and although we may have the satisfaction of knowing that it has not existed, during even that short period, without beneficial results, yet the incidents are not such as to call for remark at this time. But in a great and growing community such as this our "Institute" has a history for the making, and I would ask you to go along with me in considering how this is to be accomplished. It is essential to success that we should have a good motive to begin with. In our petition for incorporation we stated that our object was, "The advancement of the art and science of architecture," &c., and the Government of our country, in closing with these proposals, committed to us specially the duty of watching over and developing the art within the bounds of this important district. But if we look into the matter seriously, we will probably find that we have laid ourselves under obligations to an infinitely higher Power. The laws of architecture do not consist in a series of arbitrary contrivances. They were not invented by man, but merely discovered by him. The process was one of slow degrees, carried on in widely-separated quarters of the globe through a long succession of ages, here a little and there a little, sadly marred in many cases by crudity and error, in some radiant with Divine truth, yet all possessed of points of relationship showing a common origin. It is a most remarkable fact that architecture in its highest forms does not bear the least resemblance to anything in Nature, that it is peculiarly and exclusively a human work; and yet, long before man came to need it, long before the foundation of the world, at the very beginning, in the councils of eternity, the laws which regulate this art were framed, and, gentlemen, it cannot be supposed that they have been drifting down the stream of time unheeded by their Author. Emanating from such a source, they cannot be trifled with blamelessly. I am inclined to think that they cannot be perverted with impunity. If we feel ourselves called on to administer these laws under the influence of those motives, I believe that the present state of things cannot continue much longer. The question has often been asked, "How is it that there is no modern style of architecture?" This question has been so often put without receiving any answer, either by word or deed, that it has come to be considered a foolish question. But so persuaded am I of its propriety, and so sure am I that it must sooner or later be taken up in earnest, that I shall continue to reiterate the obnoxious question as often as opportunity offers, and at the same time do what I can to demonstrate the reasonableness of the demand and the practicability of getting quit of the trammels that have so long prevented our enjoying the full privileges and honours to which our profession is justly entitled. Every past period of civilisation had its architecture growing out of it as by a natural process, and exhibiting in a permanent form the more important features of its development. But with us architecture has all but ceased to be a living art, and the present age, so rich in achievement in other departments, is seen making the most ridiculous efforts to insinuate its overgrown person backwards into the empty shells of dead ages, which lie scattered about upon the old tide marks of civilisation, rather than secrete or shell for itself according to the ordinary course of nature. If we have no architectural style, it is not for lack of material, for we know nearly all that has ever been done. It is not for lack of wealth, for our undertakings are most extensive, and exhibit a lavish expenditure of money. It is not for want of intellectual talent, for we have excelled all former ages in the number and grandeur of our discoveries. How is it, then, that there is no modern style of architecture? Some will answer that the field is exhausted; but genius and enterprise has converted many an exhausted field into a stage from which deeper and richer fields have been reached and wrought. I will not say that it is easy to rid ourselves of the odium that attaches to us in allowing or contributing to the continuance of this very unnatural and unsatisfactory state of things, but it is not difficult to point with clearness and certainty to the means by which that most desirable end is to be obtained; and it is thus—To abandon with all convenient expedition the whole mass of accumulated human traditions under which we have been, as it were, smothered, and take earnestly to the study of the Divine laws, and by-and-by we shall find it more difficult to keep running in the old rut than hitherto we have found it difficult to get out of it. Let us once fairly comprehend the living law, and we will at once and for ever get freed from the bondage of dead forms. And yet these old forms are not to be despised; far otherwise. They are there for dissection. They are there to teach us what has been already discovered—to place us upon an elevated starting-point for yet higher attainments—to connect our sympathies with the men whose thoughts they represent, and with the Creator whose laws they reveal to us. I admit that there are in some of the more highly developed styles features which are as near perfection as we can well conceive, and, in so far as we can thoroughly comprehend the spirit that is in them, they remain to us living forms. But as no two minds are exactly alike, and as all our work should be done "on soul and conscience," it is better that everything should be cast into the crucible and reduced to fluid thought, to be remoulded into fresh forms of expression, even at the risk of suffering a little deterioration. If we are duly watchful, the process, by being often repeated, must lead to improvement and ultimate emancipation. The majority of our popular writers on architecture affect to speak derogatorily of all attempts to purify and regulate our architecture, and boldly advocate those styles which admit of greater latitude and variety. They take great delight in marking the peculiarities of individual treatment, of the characteristics of different nations and periods, of the interesting association which they suggest. Again, we are told that our chief business is to embody the prevailing taste of the time—to adapt our designs to the sympathies of our clients. High art is said to be irksome, and so a style based upon what is called common sense and homeliness is specially recommended. Now, there is a certain amount of feasibility in all this, but in reality these are the doctrines which have brought our art into its present state of degradation, and reduced its professors from the position of teachers and ministers of truth to the servile condition of caterers to popular caprice. The writers who have inaugurated the present state of things are for the most part mere literary men, who are guided more by sentiment than knowledge; or professional men, who find it easier to adapt the old than to create the new, and seek to justify their course by a free use of the pen in appeals to popular prejudice. The latitude and variety which they advocate is much nearer akin to license than to liberty. True liberty consists in knowing and obeying the law. The law is embarrassing only to the trangressor, or to those who, from ignorance of its course, put themselves in opposition to it. If we could conceive of a man having a perfect knowledge of the law with unlimited power of imagination, what unbounded freedom, what grandeur, what purity, what variety would pervade all that he did! But the great difficulty that we have to deal with is not the inability of architects to keep pace with other professions, but the obstructions which are placed in their way by their employers; for, instead of giving encouragement to progress as a thing essential, or even desirable, the custom is to forbid it as a thing intolerable. The public has got it into its head that it knows by intuition what is right, and utterly ignores the results of special training and life-long study. Instead of being looked up to as the exponents of architecture, we are regarded as mere agents, and instructed what to do within certain recognised limits of commonplace. The public believe that it understands and loves art, whereas if your work has not the familiar commonplace aspect—if it does not suggest some pleasing association—if it does not resemble some other thing that has been sanctioned by some authority—in short, if it has nothing to recommend it but its artistic merits, it is unceremoniously put aside as despicable, and just in proportion to its excellence is it hated and condemned. An intelligent public cannot brook instruction, and regards anything that seems above its comprehension as offensive and insulting. While this state of things is allowed to continue, it is evident that we will neither be respected nor remunerated as we ought to be, and so the aim of this association should be to devise means to put matters into a more satisfactory position. There is a story told of Canova which may be repeated here by way of illustration. Some great man had died, and some of the people of the town in which he had accidentally been born thought it a good opportunity of bringing themselves before the world, and resolved that his statue should be erected in their market place. They were recommended to give Canova the commission, and accordingly a deputation was sent to Italy to tell the sculptor what was wanted. He heard them and said, "Is Mr. Flaxman too busy to take your commission?" "Mr. Flaxman?" said they. "We never heard of him." "Ah," said he, "you English *see* with your *ears*. Your own Flaxman is the first sculptor in Europe, and you don't know it. Give him your commission." Now, then, the question is how are we to get people to see with their eyes. The funds of this institution are not calculated for aggressive measures. It is not intended that we should hold meetings to which the public might be invited to hear lectures. We cannot support a local periodical for the purpose of advocating our views; but perhaps some of our members might be willing to join a committee whose business it would be to act upon the public through the press, either by writing themselves or getting selections from books and periodicals quoted in the local papers, or any other means that might appear likely to further the purposes of the Institute. The public have no interest in being misled, and, if we could manage to awaken an interest in our work, improvement would follow as a matter of course.

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ART AND SOCIAL LIFE.

Mr. H. H. STATHEM, Junr., recently delivered a lecture on this subject before the Liverpool Literary and Philosophical Society. Mr. Stathem touched on painting, music, architecture, and decoration. The following may be taken as a sample of the lecture:—

Nor can it be said that this nonchalant attitude towards the art of painting, as publicly exhibited, is compensated for by any very large amount of intelligent appreciation thereof in private life. It is true that the "patronage" of art (as it is termed), the ambition to possess a fine collection of paintings, is no longer considered as the exclusive privilege of the nobility; that this ambition is largely indulged by a class who, a generation or two back, would have scouted such an outlay as a frivolous waste of money. And there can be no question that among the wealthier mercantile men of England are to be found those who have both a genuine enthusiasm for, and a very competent critical judgment on, works of art of a high class; and that a perception of the value and dignity of art is slowly permeating social strata which were once considered to be necessarily innocent of any such predilections. But is there not, in the meantime, a vast amount also of mere ostentatious display of the power of the purse in such matters,—a sort of feeling that it is "the thing" to have good pictures, a display of what is called a "valuable painting," exhibited just as another man exhibits particular old port, as something he was lucky in getting, and which everyone cannot get? And is this a worthy way of looking at a great branch of imaginative art? And still meaner is that appetite for speculation in works of art, too frequently met with, which leads a man to look out for pictures that are likely to rise in the market, and to boast (as if it were something to be proud of) that he can get twice as much for that picture any day as he gave for it. It is to be feared that this mercenary view of art is only too much encouraged by the grasping and money-making propensities of some of the artists of most popular name among us. It was remarked by an eminent French critic, the late M. d'Henriet, whose admirable Essays on Art were familiar to the readers of the *Revue des deux Mondes*, that many of the English artists, though they devoted a great deal of time to the study of the greatest examples both of ancient art and of foreign contemporary styles, seemed to carry none of the fruits of it into their practice; "they make arrangements," he says, "with a picture-dealer, and produce rapidly the style of pictures which will command a price in the market." It is known that this is precisely the case with regard to some of the most popular English painters: and the result is what might be anticipated from such a system; the prices are forced up to a conventional standard by the avarice of dealers; and the painter, finding that he can get his price for anything with his name to it, is content to turn out pictures with no recommendation except the power of manipulation which long practice has given him, and to repeat himself to any extent, until one is absolutely weary of the sight of his mannerisms. Hundreds of pictures of this kind are bought, at prices which are quite ridiculous, by persons who positively would not give a shilling for the same work without the artist's name on it. And this sort of folly, and these forced prices, foster the idea that art is only a luxury for the few; a notion which seems at least to be practically acted upon. In how many of the drawing-rooms of persons of average means do we find, on looking at the walls, any indication of the owner's tone of mind, anything to show that the pictures or prints hung there are introduced from any better motive than merely to fill up the wall, and give the room a furnished look? Prints or photographs of some well-known popular picture, or some of those great, coarse, common-place engravings which "Art Unions" dispense to their subscribers, mostly form the staple, with, perhaps, some starved little statuette of a Venus or a dancing girl; and rarely indeed is there anything which suggests a new and original idea. Yet something far better than this is attainable, were it wished for, without pre-supposing extravagant outlay. I have certainly known rooms, and those of no wealthy owners, which it was a pleasure to go into, not because their walls were decorated with expensive purchases, the work of well-known or famous artists, but because all that was hung there had a meaning and significance, and whether it were print, or photograph, or water colour, showed unmistakeably that it had found place there, not as a mere piece of furniture—not because it filled up the wall, or went well with the carpet or curtains—but because it was something that its owner loved, that answered to some phase of his own mind, and furnished the starting-point for some pleasant train of thought and association. Thus it is that genuine art, even in its simpler forms of expression, can impart a character and grace of its own to a dwelling, which no mere tasteless or ostentatious expenditure can emulate.

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ON COLOUR FOR DECORATION.*

It may be well to consider the two senses, or perhaps the loose sense, in which we use this word colour. A country draper, who has set out his window against market-day, with satins or de laines of every positive hue in its most brilliant key, rejoices in the colours of his display. The dyer who has most recently distanced his competitors in the quality of the last new form of aniline dye with which he has managed to load the fibres of the silk or wool in his pans, is said to be "the best colour dyer," and his results are pronounced to be splendid, magnificent, superb. And it is to be observed that the taste of to-day all goes in the direction of fiery and fierce colours, whether woven fabrics, in china, in glass, or indeed in whatever form they can be supplied, so that though a proportion of pleasant tertiary tints and grays are constantly being produced in coloured materials, they are evidently not "the fashion," and it is the "new" green, violet, or blue, just as a year or two ago it was magenta, which challenges public admiration, and is pronounced to have surpassed all other colours.

It is evident, however, that this is only a temporary relative standard, for the "splendid and magnificent" blues and greens of ten years ago are thrown entirely into the shade by the fierce and positive tints of to-day, and these again may likely enough be left behind by the chemical discoveries of the next decade.

But when an artist speaks of the "fine colour" of a painting by Tintoret or Turner, or of a Mediæval or Oriental brocade, he speaks of successful combination of harmonious tints which was as "fine" when produced as it is now, and as it will be (fading or deterioration apart) centuries hence.

In this sense, a piece of colour meriting all the above superlative adjectives and many more may be, for instance, a series of gradations of whites, yellows, and grays and no more. And in writing on colour, I wish to show the worthlessness, nay, hurtfulness, of the popular admiration of it in the former sense, and the extreme value and beauty of it in the latter.

Happily, besides artists not long passed away—such as Turner and William Hunt—we have others now alive and at work—Millais, Rossetti, Burne Jones, and others—whose easels do annually turn off works of art, many of them entirely fine in colour, and more than one of whom also design stained glass, frescoes, embroidery, and furniture; so that we need not be entirely relegated to Mediæval times for specimens of fine colour in the artistic sense. Work good in colour can be obtained in this country as well as in the East, though from neither source is it abundant. I will therefore mainly confine my remarks to that sort of colouration of which we have too much, and of which we want, or should want to be rid. Colouration may be roughly grouped in two classes; first, the use of large masses of evenly dyed or painted hues, the chief beauty of which is supposed to consist in their absolute and positive brilliancy, and in their rivalling in intensity all other attempts at the same; secondly, a style of decoration which rejoices in the high-sounding name of "Polychromatic," the merit of which consists in bringing together, kaleidoscope-fashion, as many contrasting colours as possible, each as full and positive as may be, and all placed in the closest juxtaposition.

Both these abuses, often in their grossest possible forms, both separately or unitedly, occur in modern stained glass, in church draperies and embroideries, in crochet work, in wall decorations (ecclesiastical and domestic), and last, but by no means least, in dress.

Everything worth having has its use, and, unfortunately, also its abuse. Possibly even absinthe and aniline have their proper uses, though, so far as we know at present, they are only employed, the one to destroy the appetite for wholesome food, and the other to ruin the taste for wholesome colour. Laudanum may be life-giving as a medicine, brandy as a stimulant; as a beverage, either of them is simply poison, but a poison so insidious in the hold taken upon appetites gross enough to demand them, that there have been men not content with either separate, who must needs mix the two, and drink them undiluted. It is the same in language: a string of superlative adjectives, or a pointed and even violent expletive, may at times be serviceable to point a denunciation, but a speech consisting entirely of these would be voted unbearable. Now a great deal of our present use of "decorative" colour is in no way more defensible than these instances. The east end of a church is painted a fierce and searching smalt blue, powdered with burnished gold stars, and it is pronounced "beautiful." I have seen Eucharistic vestments, I regret to say, of a full and piquant "mauve" silk; and again, of an intense "new" green, which made one wince to look at; anti-macassars and "Affghan" rugs, have, of course, always been "Polychromatic" horrors, Etnas serving as vents for disordered tastes; but they have not been sufficiently powerful safety-valves, as the silks and ribbons displayed at any evening party will testify. Holy Scripture even has become a favourite medium for exhibiting, in the initial letters of illuminated texts, crude blues, greens, and violets, all too excruciating and unendurable. But perhaps worst of all, because most permanent, is the stained glass of the majority of our makers. It may be broadly divided into two sorts, the kaleidoscopic, consisting of splashes and dots of all the most brilliant colours, set in patterns with a little modicum of browny-gray outlines, and the—— Well, I have just been to examine a fine specimen of the other, and I will describe it. The scene represented is our Lord at the well of Samaria. I take credit for arriving at this fact, for there is no legend, but the Saviour (distinguished by the usual nimbus) rests his hand upon a little brown jug, capable of holding about half a pint, and a woman before him, in a melodramatic and ridiculous attitude, holds a bit of cord. Our Lord is dressed in a tunic or coat of a startling ruddy violet shade, like beetroot juice, or the flower of the mountain primula, much intensified, banded across the knees with an elaborate border of arsenical green, and is further enveloped in a loose and flowing cloak of brilliant crimson, the lining of which, a radiant "mauve," is turned up at every possible point. The woman of Samaria has a dress of rich full violet, and both figures are surrounded by foliage and herbage of the most pungent and poisonous greens imaginable, while the architectural canopy above them is three or four shades of clay and fawn. The figures are two-thirds the size of life, and the rest of the window is quite as bad; no words that I can use can convey an adequate idea of the intensely positive colours of all the glass in this window, a large and costly one, recently produced by one of the most fashionable makers for a well known Yorkshire parish church. After this infliction, it was a relief to open a box of old "slacks" and "cruels," worsteds used thirty years ago for embroidery: gray-greens, olives, citrons, yellows, cedar-like browns and reds, all, too, beautiful, and of sufficiently recent production to make one feel very bitterly the rapid deterioration of taste in this matter of colour even during the life of the present generation, for it is beyond doubt that this style of thing is quite modern. No old work has it either in glass, painting, or embroidery. It is essentially the taste of a nation whose capabiliites of enjoying really fine art have been deteriorated and deadened by two centuries or more, in which art has been neither practised, remembered, nor loved.

We are all conscious, secretly or avowedly, that Europe, having had an age of art, has passed out of it, and has got into a shopkeeping and money-grubbing age, and that if we want standards of high taste we must look back to Holbein and Van Eyck, Albert Dürer, Tintoret, and Angelico. And so those who want to make money out of stained glass or colour decoration are driven to defend the present vicious use as best they can. "Oh, but if the Mediæval artificers had only known how to make aniline blue, or panes of glass twelve feet square, of course they'd have done so," &c., &c.

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* From *The Sacristy*. By John Aldam Heaton.

But it will not do; a couple of hours at South Kensington or the British Museum ought to be enough to convince every candid inquirer that Mediæval artists and colourists were at least equal to us in every handicraft where comparison is possible, if not indeed, as I am convinced, vastly superior to us; and fortunately as regards painting, stained glass, and embroidery, the immêdiate question before us, it is perfectly practicable to institute a very close comparison, from which we soon learn that they did know how to produce the most rich and brilliant pigments and dyes, but that they used them in exceedingly moderate quantities; so that it may be broadly stated that in the best Mediæval work we never find the objectionable use of crude and raw colour which I have deprecated above.

Nor do we in Nature. I suppose the most splendid pieces of colour we ever see are fine sunsets and rich spring meadows, with flowers and foliage. For example, take the deep lush growth in a fruitful orchard, the trees loaded with apple-blossoms above, the grass with orchids and buttercups and a hundred flowers below. But where, in either of these, do we find the least authority for those level and brilliant masses of positive green, blue, or violet, the delight of modern upholsterers, church decorators, and milliners? The sunset sky is gray blue, shading downwards to daffodil yellow, barred across with warm grays, orange, amber, crimson, and blood reds; purple, if it occurs at all, is fleeting and uncertain, and nowhere is there ever an even ungraduated colour—all is fluctuating, each colour dying into the next, and all into grays. The green of a spring meadow is so yellow a green that in a shop we should call half of it olive, and the rest yellow, and the flowers are mere spots, touches, indications of colour and light, mixed up, blended, confused: some one kind, the bluebells, or the rose campion, or the apple blossom, carrying the day completely, and making, in harmony with the grass, itself made up of a hundred tints, or in contrast to it, a picture, not "polychromatic," though in some form or other many colours may be there, but a harmoniously varied effect of one colour, or one colour in contrast to a second, filled everywhere with gradations, and with light and shade.

The fact is, if we are to take our cue from Nature, our blues and greens, and especially our violets, must be entirely different to the shades now generally used. Really fine blue, such as is to be found in Nature (or in Mediæval art), is either much grayer, like the sky, or much greener, frequently with green in it, like the bell gentian; whereas our "new" green, "emerald" green, and others akin to it, are utterly and wholly bad, and are not to be found in nature in any shade, light or dark.

If anyone will take the trouble to examine a large and varied bench of foliage, either of deciduous summer growth or of evergreen, it will be found to be thoroughly olive. A grass-plat is olive, and not "green" at all in the modern dyers' use of the word: so, again, are ferns—olives largely mixed with canary-like yellows. To be sure, malachite, copperas, and verdigris have the crude blue-green colour in them (though full of variety), but we do not desire of art that it shall remind us of poisons and death, like a horrible conception of Doré's. Modern violet seems abhorrent to both nature and art. A little of it is seen fleetingly and rarely in a sunset; in a delicate condition in fruits and flowers; in high art almost never.

The modern use of red is less unexceptionably bad; for though we are afflicted with magenta, there are scarlets and vermilions almost sure to be good, if used with some amount of graduation; and there is Turkey red, which is always good. It is noticeable, however, that some of the azaleas are magenta in colour, and yet are pleasing: why, then, is magenta so wholly bad in decoration? I think it will be found that the exceedingly positive form in which we now produce certain tints—magenta in particular—renders them almost incapable of gradation, except in the hands of an artist who will use them with consummate moderation, and lead up to them by studied gradation. Now, if we examine the azalea, we find it to be full of gradations—here in the direction of pink, there of yellow, again towards blue; all too delicate to be followed, except in laborious and expensive work of high art.

Yellows, happily, seem, with the exception of certain shades known as "maize," to be almost wholly good and wholesome. Worked in harmony with gilding and gold thread, they form a safe and pleasant haven, which decorators would do well to employ more frequently, rather than make so many dangerous voyages in the bark "Polychrome."

It may, perhaps, be replied, "Well, but I like 'new' green, blue, violet, and magenta; they appear to my eye to be effective and pleasing, and I shall persist in using them, whatever you may say." The argument, if it be worth the name, proves too much, if anything, for it would justify the drinking of raw brandy as a beverage, or the indulgence of any other intemperate and coarse taste which, as we know by experience, may prove agreeable to individuals. But, having shown that these crude colours are not to be found, at all events in the way in which we now use them, either in nature or art, I proceed, and reply to such an objector, "Your new blue, &c., is *not* most 'effective.' It is startling at first glance, and it kills everything near it, to be sure, but a fine gradation of gray or greeny blues, culminating somewhere in a touch of full blue or of green, of a wholesome character, is really very much the more telling and effective. There is a piece of stained glass in, I think, the east wall of the south transept of York Minster, which well illustrates this—the robe of a saint, from a distance, is a splendid blue, yet, when examined closely, it proves to be a collection of more or less bluish-grays and indigo blues, all graduating towards one little bit of ultramarine. And I have lately seen furniture of the time of Henry VIII., still covered with the fine brocade of that period—satin ground with a velvet figure—the effect of which at a little distance was blue, very blue; but on examination the satin proved to be a very pale and very gray blue, and the velvet to be a very dark neutral green. I am convinced that such examples are not exceptions, but point to the rule."

To give practical hints, which shall apply equally to stained glass, wall decorations, church vestments, and embroideries, furnishing, &c., &c., is not easy; nevertheless, I offer a few suggestions in three ways. First, by giving some memoranda of Oriental and Mediæval fabrics before me; second, by making a list of dangerous tints, which it is well to avoid; third, by pointing out a few safe harmonious contrasts, which last must be, at best, merely an indication of what might be said on this head.

Japan is, as far as I know, the only school of living art now in existence, and some of the Japanese manufactures are of extraordinary beauty, such as the following:—

A. Two designs in gold only, on a rich full scarlet satin ground: one very small and diaper-like; the other, a bold damask pattern, a stiff, woven material, paper and silk, probably intended for wall-covering.

B. A blue-gray crape, for a dress; the design, birds and flowers, and wavy lines representing atmosphere and water, all very delicate and graceful, left in a grayish white, the blue-gray ground being printed. Amongst the flowers comes a hedge or trellis of gold thread and a few lines of black. At large intervals a leaf, or flower, or berry is embroidered in green, red, or white silk, never exceeding the size of a shilling for each object so emphasised, and generally much smaller.

C. A fringed silk for a dress, the ground dark chocolate, printed; the pattern left in white; the figure in the fabric giving variety to both. The design is of quaint rolling lines, like conventional water lines and rich masses of leaves and flowers, about a fourth part of which are embroidered in gold thread, apple-green, scarlet, and white silks; each embroidered leaf or flower bearing about the same relation to a square yard that the capital letters do to this page of letter-press. All the rest left, evidently with intention, a quiet white.

D. An Algerine, satin-like fabric, dark scarlet ground, with stripes, upon the threads of which zigzags have been printed before weaving, one stripe being yellow, and the same scarlet as the ground; the next black and a ruddy white.

E. An ancient damask, probably taken out of a church in Spain. An exceedingly rich and quaint design, consisting mainly of scrollwork, in several shades of yellow silk, inclining to browns, with spaces or panels filled with red, blue, and green, each of these being particularly low in tone, and the whole very rich, yet quiet, in effect; a truly magnificent fabric, in fine condition.

In none of these, and I select them for their richness, variety, and costliness, is there any approach to the sort of thing now so much in vogue for altar frontals, for vestments, for illumination, where two, three, or more positive colours in masses are put upon a ground equally positive and contrasting.

Again, Angelico surrounds one of his finest Madonnas (in Lord Dudley's collection) with a drapery painted with extraordinary force and care, consisting of gilded pomegranates, with a touch of vermilion—where the stalks of each group meet—all on a dark gray, nearly black, ground! John Bellini puts behind a portrait, a curtain, splendidly drawn, of dark olive green, powdered with sprigs of creamy white and small red berries, though the portrait is that of a priest dressed in black. Nothing at all equivalent to the stained glass above described is ever to be found in the realms of art; it has been reserved for the nineteenth century—the age of the "god of getting on"—to perpetrate such an outrage.

In stained glass, however, Messrs. Morris & Co., of London, have fortunately applied high art to their work, and any one desirous of avoiding the "colour" of the above specimen, may do so by applying to them.*

In embroidery, church draperies, wall decorations, &c., if it be not possible to obtain the assistance of the artists mentioned above, much trouble and danger may be avoided by adopting some such rules as these:—

1. Violets of all kinds (except those in spring hedges) should be avoided. When the colour is required for church-work, get cloth or silk of a dark "old-fashioned" violet, and leave it alone; adding a line or border of red or white, if decoration be needed.

2. Positive black or white is nearly always dangerous; dark bottle green, or a mixture of that and dark chocolate, is a great improvement on black; and white, except when wanted in touches or lines as a high tint, should be as yellow as good cream.

3. Avoid blues if possible, being very Scyllas of difficulty to ordinary hands; if they must be had, let them be of a grayish indigo character, or greenish, like that splendid pigment, "Prussian blue."

4. All greens of a malachite and poisonous hue should be avoided, as we would avoid arsenic in our food; if blue greens be demanded by the nature of the design, they should be quiet, gray, and neutral.

And 5. All reds inclining in the least to bloominess or purpliness, should be avoided with equal care.

On the other hand, all the shades of yellow, from deep orange, through browny yellows and citrons, amber, and canary colour, into apple-greens and olives, until we come to something as dark as invisible green, are not only most precious and beautiful, but are also the most necessary and useful. And all the reds which range between flesh tint, through scarlet, into a coppery brown, are equally beautiful and valuable.

In combinations, I would suggest the following, which of course are not to be supposed to bind the decorator's fancy, but only to indicate a few safe directions in which shipwreck may probably be avoided:—

1. Whites and yellows are always safe; the white, if in mass, should be gray and creamy, and then a little positive white produces a high light upon it; and the yellows may range from pale canary to deep orange, and even to brown. Some of the most beautiful stained glass ever made consists of figures drawn in dark brown outlines, dressed in whites and yellows, and a background the same; and this is an excellent manner for fresco.

2, Equally safe is a coloured ground, decorated with gradations of the same colour, with lights of white or yellow, supposing always that the ground colour is a safe one, *e.g.*, in olive-green drapery, embroidered with foliage, dark olive-green stalks, pale olive and apple-green leaves, flowers of white, buds or berries of yellow.

3. A fine and safe effect is produced by using a cream white ground, powdered with a diaper or objects in yellows, while the main feature stands out in rich and full colours, say two kindred colours, as green and Prussian blue; *e.g.*, stained glass, composed of a groundwork of quarries, carrying little yellow and brown diapers, with a saint or angel dressed in green and blue, on a little green grassy mound.

4. This may be extended by making the principal object in two contrasting colours, say reds and greens; but it is a good rule to adopt (unless a Millais or Rossetti be the adviser, in which case their way is the way), that when two contrasting colours have been used on a ground, such as yellow and white, it is best to stop there, and seek to enrich the effect if magnificence be desired, by increasing the gradations of the colours already employed, and so their beauty, rather than, by increasing the contrasts, to multiply the difficulties and the chances of failure, or at least seriously to lessen the probabilities of success.

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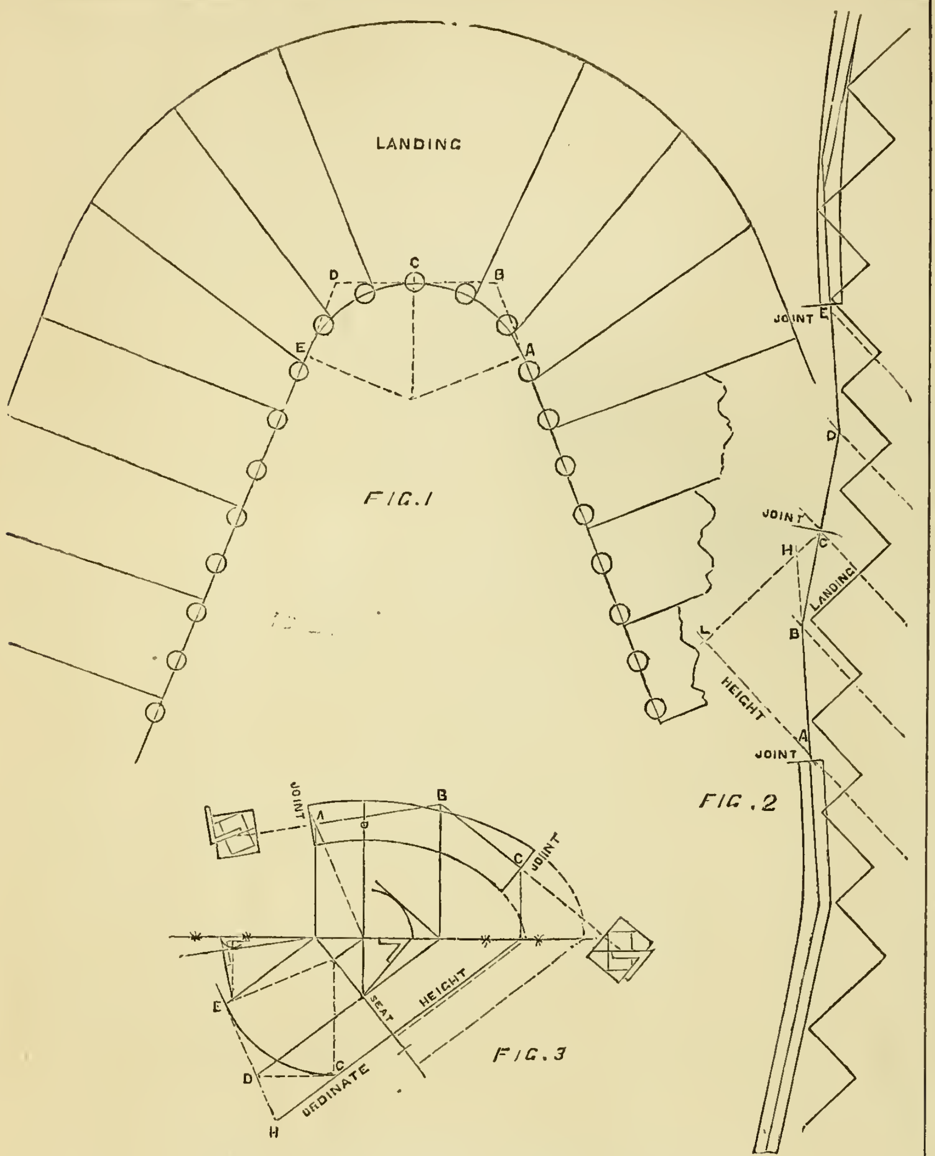
* Only let them stipulate to have new designs. It is really provoking to see the same figures over and over again in Messrs. Morris's windows throughout the country.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXIX.

NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 260.)

Plate 29.—Construction of Wreath for Stairs which Stand on Acute Angle, Having a Landing to Give Access to a Door or Window.

FIGURE 1. When the ground plan of stairs makes either obtuse or acute angles, adopt the same process for the construction of the mould as if the strings were parallel.

For example:

The centre line of the rail is enclosed by the tangents A, B, C, D, E. Now let these be unfolded at Fig. 2. Have the winders to stand in the same position as those on plan. Also the square steps. Draw the pitches and ramps, as shown. Be careful to have that of D E parallel with A B, in order that one mould may answer for both pieces of wreath.

The letters on the pitches agree with those on the ground plan.

Find height and direction for ordinate by squaring over from joint C, cutting at L; which gives A L for height. Next, extend A B, cutting at H. This gives L H as direction for ordinate.

We are now ready to draw the mould as shown at Fig. 3.

Let the tangents C, D, E equal those on plan. Let E H equal L H on the right. Join H C extended. This gives the ordinate. Draw from D and E parallels with it Make seat square with it. Let height equal that of A L on the right.

Draw the pitch and complete the mould, as usual. See that its tangents A, B, C agree with corresponding letters on pitches to the right.

Stairs of this form are often seen in London, Paris, and other cities of Europe, as well as in this country; and where necessity of location demands such a plan, the method just given may be adopted for its construction.

THE PRINCIPAL STAIRCASE OF THE UNIVERSITY COLLEGE AT ABERYSTWITH.

THE picturesque staircase shown in our illustration of this week is the principal one belonging to the University College of Wales, formerly known as Castle House, Aberystwith. Mr. Seddon, the architect of the structure, is to read a description of that and other buildings erected by him in and near that town at the Institute of Architects on Monday next.

A ground plan and entrance elevation of the Castle Hotel as it was then called, and for which purpose it was built, will be found in the number of this journal for December the 28th, 1866. Since that period the building has been purchased by the promoters of a scheme for establishing an Educational College in Wales, and strenuous efforts are now being made towards completing and endowing it. We trust that if these are successful the Committee will resolve upon finishing the work in the same spirit as that in which it was begun, and not spoil it by injudicious economy; for having purchased it for so much less than it cost, as they have done, a certain moral responsibility is attached to the bargain.

The plan of the staircase, as may be sufficiently seen from our view of it, is complex. The first flight leading from the main corridor, which is curved, is a straight one. Then from the landing a few circular steps wind round each supporting column of the vaulting, and thence another straight flight on each side leads to the corridor on the first floor. The shafts of the columns are all of Ransome's patent stone, and the capitals and vaulting of Bath stone.

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Fall of Basaltic Pillars at Staffa.—Pieces, three or four feet in length, of two of the basaltic pillars at the entrance of Fingal's Cave, Staffa, at the west end, have fallen from a height of from 40 to 50 feet. A shock of earthquake was felt in Iona on the 22nd ult., and the inhabitants connect the two events.

THE CRYSTAL PALACE AQUARIUM.

WITH the exception of the aquarium in the Regent's Park and the one in the Zoological Gardens at Dublin (both of them confessedly imperfect), no public aquarium exists in Great Britain. This state of things will soon be altered, however, for some time ago, as many of our readers will remember, a company was formed with a capital of £12,000, to make at the northern end of the Crystal Palace (the portion which was partially burnt down in 1868) an aquarium of large size, which is now nearly finished, and will soon be opened, and in which (according to Mr. W. A. Lloyd, writing in the *Athenæum*) all the successive improvements which experience has suggested will be combined. The Crystal Palace aquarium, connected with the Palace itself by stairs, measures 312ft. long and 20ft. high, and is in width 53ft. in some places and 35ft. in others. The public portions of the building consist of three rooms—a saloon, of which the floor-space measures 184ft. long and 16½ft. broad; a south room, having a floor space of 30ft. long and 8½ft. broad; and a north room, with a floor space of 14ft. long and 8½ft. broad. Besides these, there are in the part not shown to the public, a work-room, an engine and boiler-room, an apartment to contain the heating apparatus, two store-rooms, an attendants' gallery running from end to end of the entire building, and an office. There are 150,000 gallons of sea water, weighing 700 tons, of which 130,000 gallons are in a reservoir below the saloon, and 20,000 gallons are distributed among 60 tanks containing the animals. These tanks are of various dimensions and proportions, varying from 75 gallons to 4,000 gallons each, and ranging in depth vertically from 6in. to 6ft. of water. The sea water is raised into these tanks from the reservoir below the saloon, and it flows through and amongst them, falling down a succession of levels, so that in its progress it may do as much work as possible, until it enters the reservoir from whence it came, and from which it is again and again pumped by steam power at the rate of from 5,000 to 10,000 gallons an hour continuously day and night, and by means of this aërating motion, coupled with the oxygenation derived from growing plants, no change of water will be needed, and the quantity will be used year after year indefinitely, the loss of fresh water by evaporation being supplied weekly by the addition of an equal quantity of water distilled on the premises. Most of the essential parts of the aquarium are in duplicate. The architect is Mr. C. H. Driver, who has shown much ingenuity in every part, and in making a saving use of all portions of the area assigned to him. This aquarium will, for its size, be the most economical one ever made, both in construction and maintenance.

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UTILISATION OF LONDON SEWAGE.

AT the last meeting of the Metropolitan Board of Works, a report was brought up from the Works and General Purposes Committee, which stated that the solicitor to the Board had had before him the draft of an agreement between the Board and the Native Guano Company, for carrying into effect the arrangement for allowing the Company to erect works at Crossness, for the purpose of treating a portion of the South Metropolitan Sewage by the A B C process. The plans which accompanied the agreement had been submitted to and considered by the engineer to the Board, and also by the engineer and solicitor to the Company. The following are the main points provided for:—The Company are to be at liberty to build works, as approved by the Board's engineer, the possession of ground being given to them on the agreement being executed, and they are empowered to carry on their process for one year, from the 1st of July next, provided no nuisance or annoyance is caused, and no interruption occasioned by the Company to the main drainage works. The Company indemnify the Board against all loss or damage by reason of any nuisance except by their process, or for any damage to or interruption of the Board's works at Crossness. It is understood that the permission to use the land is to be without any charge to the Company. In the event of a nuisance, or bankruptcy, or winding-up of the Company, the Board reserve a right to re-enter, and the works of the Company in case of bankruptcy are thereupon forfeited to the Board. The Company are also precluded from assigning or parting with the agreement or any benefit therein, and the Board are to have free access to the Company's works at all times, and may view the process and keep records of the chemicals, &c., used. The Company were anxious to have immediate possession, in order to prepare their manure for the market at the proper season. The Committee submitted the agreement and plan with the report. The report was adopted.

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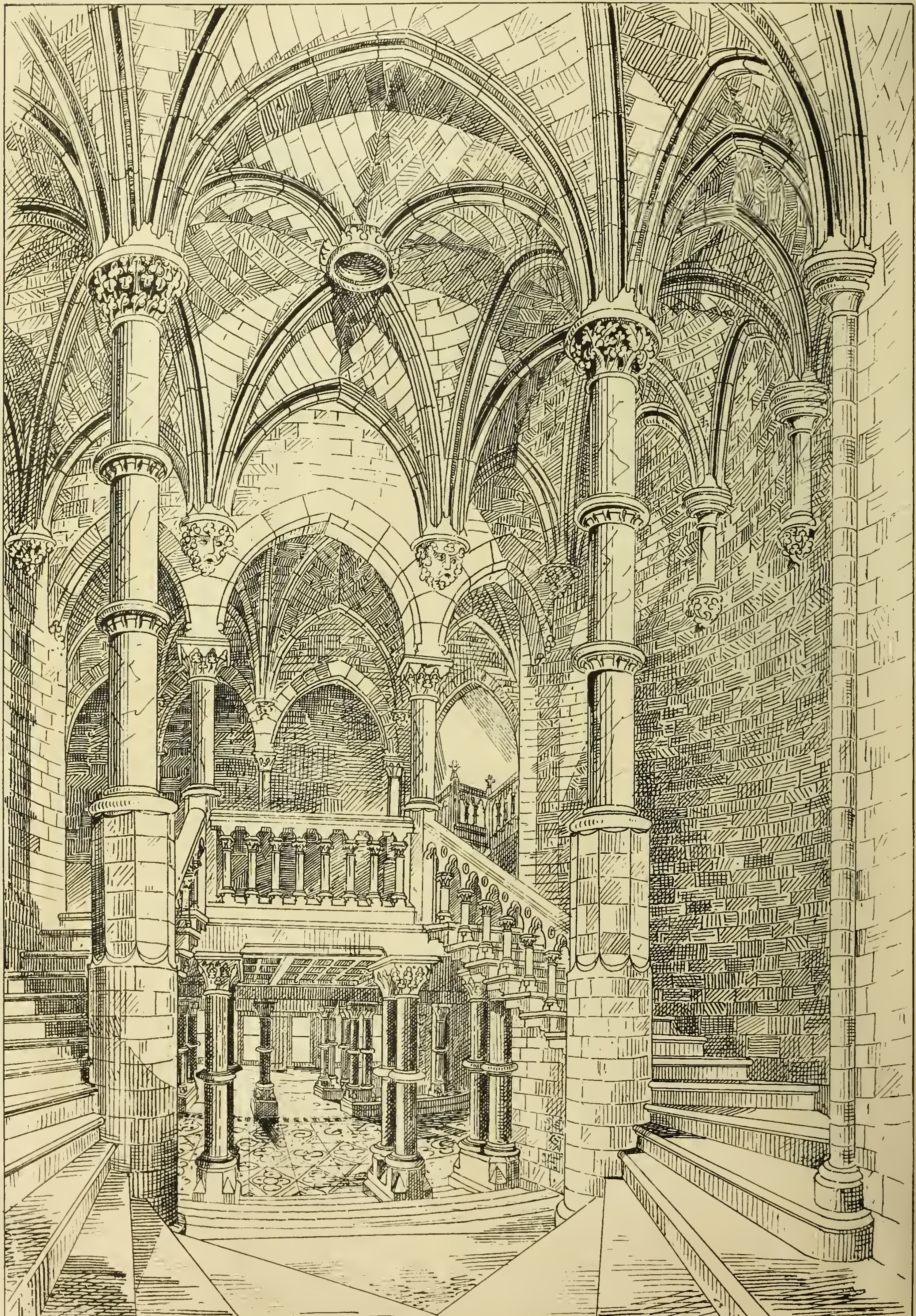
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



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THE PRINCIPAL STAIRCASE, UNIVERSITY OF WALES, ABERYSTWYTH.

JOHN P. SEDDON, ARCHT

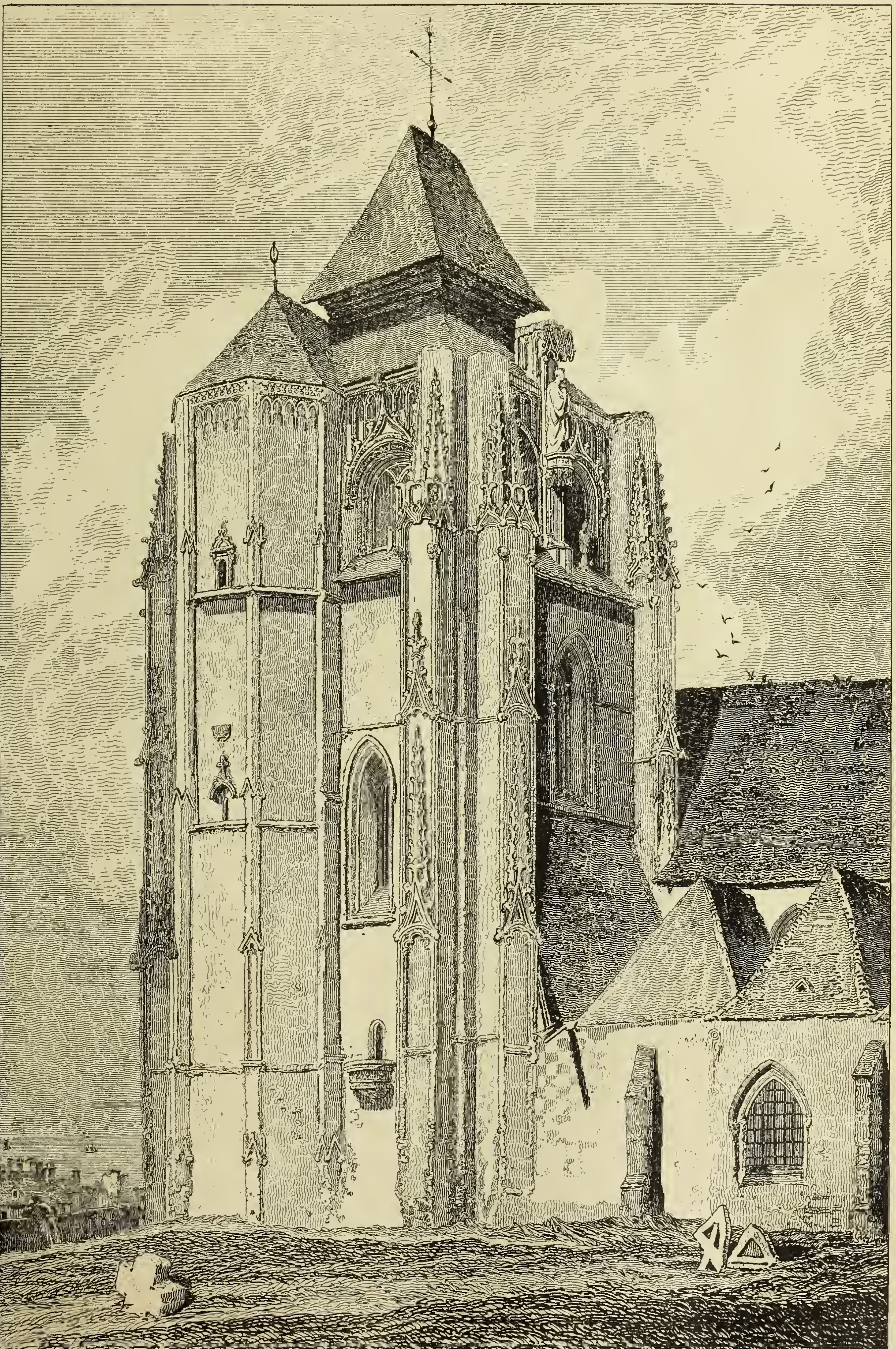

Photo-Lithographed by Whiteman & Bass London

TOWER OF THE CHURCH OF TRÉPORT NEAR EU.

THE DESIGNS FOR THE PROPOSED CORPORATE BUILDINGS AT BIRMINGHAM.

WE understand that Mr. Waterhouse (the architect appointed by the Estates and Buildings Committee of the Town Council to make a selection of the best designs sent in for competition for the proposed Corporate Buildings) has returned the following as being the most meritorious:—No. 9, bearing no motto; No. 17, motto, "Perseverantia;" No. 27, motto, "Forum;" No. 15, motto, "In Uno;" and No. 12, motto, "Desideratum." Of No. 9 there are nine drawings, Classic style; of No. 17, twelve drawings, Classic style; of No. 27, thirteen drawings, Gothic style; of No. 15, eight drawings, Classic style; of No. 12, eight drawings, Classic style. There were twenty-nine designs sent in for competition, of which seventeen were Gothic in style, eleven Classic, and one Renaissance.

Invitations have been sent out by the Estates and Buildings Committee to the members of the Town Council to inspect the selected designs on Friday and Saturday (to-day and to-morrow). We believe that No. 9 is contributed by a stranger to Birmingham, and that Nos. 17 and 27 are by local architects. In fact, in this, as in other so-called "anonymous" competitions, the names of the competitors have not been kept secret, and the authorship of many of the various designs has been known from the very commencement of the public exhibition of the drawings. In these cases, if the author himself is silent, his friends are invariably garrulous, and secrets that are not worth preserving seem to be told with as much alacrity as those that are really important. It is a curious thing that, whilst twenty-nine sets of drawings only were received for this important range of public buildings, forty sets of designs or thereabouts have been sent to the neighbouring district of West Bromwich, in competition for the Town Hall that is about to be erected in that dull neighbourhood. We understand that in this case also the committee is puzzled with the conflicting merits and demerits of the various designs, and would be glad if it were possible to combine various features from the rival drawings, and by taking a little from each, and not much from anyone, combine that which is good in the designs, and leave out that larger portion which is quite other than good.

The logical result of this wish, which so many committees have felt, and which some have had the hardihood to acknowledge, will be that presently committees will advertise for designs, not for complete adoption, but as storehouses from which a "Combination" architect may, with a genius all his own, select the pretty bits at the dictation of the committee, and melt them into a design, which would even then be as original as nineteen-twentieths of competition drawings are at any time.

And we do not doubt but that architects could be found, possibly in plenty, to respond eagerly to such an invitation.

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The Institution of Civil Engineers.—During the last quarter the additions to the list of members of all classes have been 151, while the casualties have been 41, showing an effective increase of 110. The numbers on the list on the 5th inst. were 16 Honorary Members, 724 Members, 1,051 Associates, and 204 Students; making a total of 1,995, as against 1,847 at the same date last year.

The Contract for the Chelsea Embankment.—At the last meeting of the Metropolitan Board of Works, a letter was read from Messrs. Neale and Fry, declining to carry out the contract into which they had entered with the Board at the previous meeting for the construction of the Chelsea Embankment and the Northern Low Level Sewer, at a cost of £112,404, on the ground that they had discovered an error in the pricing of their estimate. The contract was consequently let to Messrs. Markwick and Thurgood, of Lambeth, at the sum of £114,000.

WATER.

MR. BAILEY DENTON has, in a letter to the *Times*, called public attention to the necessity of preserving water in our country villages:—"We are now on the eve of a season which must be attended by a water famine among the rural poor, if it be not providentially relieved by the fall of more rain than usual, with special means taken to preserve it when it falls. At this moment the springs throughout the country are lower, and the surface ponds and pools have less water in them, than my memory recollects to have been the case in any former spring; and, as vegetation is getting rapidly forward and evaporation is becoming more active, it is not likely that the subterranean stores will be increased by any amount of rain which may now fall. But it is in the power of cottage-owners to collect a portion of the rain which may fall, by the provision of underground tanks, and so make up in some measure for the scarcity produced by the recurrence of several dry summers without the intervention of a thoroughly wet winter to effect a balance. A labourer's cottage and outbuildings generally cover about 2½ poles of land, and half an inch of rain falling upon them would, if collected, furnish 354 gallons, which, at 10 gallons a day, would last five weeks. But I venture to repeat the question I have so often, with your permission, already asked—When are we going to collect and store the surplus waters of winter—there is never a winter without surplus drainage and surface waters—for disposal in the summer?"

Mr. J. C. Clutterbuck makes the following remarks on the subject in the same paper:—"In the year 1852 the water in the chalk stratum, whence at least two-thirds of the perennial water flowing to the tideway in the Thames is derived, was lower in April of that year than at the present time. With the exception of January, the rainfall from February to May inclusive was little more than half the average, yet the year 1852 was the wettest year for the last thirty years at least, and by the beginning of December the water in the chalk stratum was higher than it has been since, and the flood, known in the Thames Valley as the Duke's flood (because it rose to its highest on the day the Duke of Wellington was buried) exceeded any other within the last fifty years. Whether the 'balance' lost in the winter will be made up in the summer and autumn of this year we have yet to learn; but seasons often repeat themselves, and a dry spring is often followed by a dripping summer; but as matters stand at present no waste of water should be made, and it is just the season to provide tanks for cottages, farmsteads, and other places, from the roofs of which water may be discharged and stored."

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COMPETITION.

Bowles's Five Acres Charity Estate, Camberwell.—Some time ago it was decided to survey this estate, and to obtain plans for rebuilding the property upon it. The survey having been made, the General Purposes Committee of the Camberwell Vestry advertised for plans, offering £20 for the best and £10 for the second-best plan. In response to this advertisement, thirty-six plans were received, and referred by the General Purposes Committee to a sub-committee of themselves, on which happened to be two of the trustees of the charity. This sub-committee selected ten of what they considered to be the best plans; and subsequently re-selected five. The General Purposes Committee then brought these plans before the Vestry, but the Chairman of the Committee (Mr. E. Dresser Rogers) declined to give priority to any single plan, because, as he said, "some of the competitors' names had oozed out." It was therefore resolved to submit these five plans and five others to the inspection of Mr. Pownall, architect, giving him no further instructions than a copy of the Committee's resolution, and the advertisement in answer to which the plans had been sent in. Mr. Pownall decided in favour of two plans, neither of which was among the ten chosen by the Committee. These two plans the Committee could not approve, the one being framed for pulling down the whole of the old buildings on the estate, and the other providing for a much smaller revenue than some of the plans chosen by the Committee were laid out for. The matter was next referred to the Trustees, who rejected the two plans recommended by Mr. Pownall (and which were marked respectively "Spes" and "Vigilans") and decided in favour of the plan marked "L'Esperance," the author of which is Mr. William Berriman, of Camberwell, the architect to the Trustees.

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The erection of the cottage hospital at Shaftesbury, in memory of the late Marquis of Westminster, is about to be commenced.

METROPOLITAN IMPROVEMENTS.

The Widening of Ludgate-hill.—At the last meeting of the City Commissioners of Sewers, it was resolved, on the recommendation of the Finance and Improvement Committee, to instruct the Solicitor to serve the usual legal notices on the owner or owners of houses situate on the south side of Ludgate-hill, and severally numbered, 61, 65, and 67, to take the same, with a view to complete the widening and improving of that portion of the said street.

Widening of Tooley-street, Southwark.—At the last meeting of the S. Olave's District Board of Works, it was resolved to offer £700 to the Rev. Canon Bamber, for ground to be acquired by the setting back of four houses in Tooley-street, and partly in Unicorn-yard. It was also resolved that the Metropolitan Board of Works should be asked to contribute towards this improvement.

Enlargement of Billingsgate Market.—At a meeting of the Court of Common Council, on Wednesday week, it was resolved, upon the recommendation of the Markets Committee, that Billingsgate Market should be extended to the western side of Darkhouse-lane, and that the Committee should be authorised to prosecute the Bill introduced into Parliament for obtaining powers to acquire the necessary property for that purpose, and raise the requisite funds to an extent not exceeding £150,000.

Asphalte Paving in S. Pancras.—At a meeting of the S. Pancras Vestry last week, a report was submitted by the Works Committee, recommending that a contract be entered into for paving Guildford-street with asphalte, at an estimated cost of £1,200. The recommendation was negatived, on the ground that the asphalte was too expensive and too slippery, by 26 to 22.

The Paving of Hamilton-place.—At the last meeting of the Metropolitan Board of Works, a report was presented from the Works and General Purposes Committee with regard to the proposed paving of Hamilton-place, both footways and carriage-way, with Val de Travers asphalte. The report said it would be remembered that tenders were opened for the formation of the roadway, &c., and the Board determined to accept that of Mr. Webster, amounting to £3,329 10s. At the same time the Engineer's report on the memorial from the inhabitants was laid before the Board, and a copy of it, together with the report of the Engineer, was ordered to be forwarded to the Vestry of S. George, Hanover-square, as the body on whom the care of the roadway would devolve, with a request that they would furnish the Board with an expression of their views upon the subject. The Committee had received the reply of the Vestry, which was to the effect that they recommended the Board to construct a macadamised road in Hamilton-place, and to make the footways of York paving. The Committee recommended that the views entertained by the Vestry be communicated to the memorialists. The report was agreed to.

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Royal Institute of British Architects.—Her Majesty having approved of the award of this year's Royal Gold Medal to Mr. James Fergusson, the formal presentation of it, with the Soane Medallion and other prizes, will take place at the meeting on Monday evening next, when a paper will be read by Mr. J. P. Seddon, Hon. Sec., on the new University College of Wales at Aberystwith.

Destruction of the Economic Museum, Twickenham.—On Wednesday week a fire was discovered at the Economic Museum, Twickenham. Notwithstanding the most strenuous efforts to save the building, the Museum, coach-house, stables, and outbuildings were totally destroyed. A fire broke out in the lower part of the building on Tuesday afternoon. The salvage men and others say it was soon put out, with but little damage; but it appears probable that some smouldering fire was left unextinguished. The Museum was erected by Mr. T. Twining, and its maintenance is said to have cost £1,000 per annum. It was established with a view to impart to the public a knowledge of domestic and sanitary economy; and for this purpose it was supplied with a very valuable collection of models, designs, &c. The movement which led to the formation of the Museum was commenced by Mr. Twining in 1850, was sanctioned by the Council of the Society of Arts in 1852, and inaugurated by an exhibition of domestic economy at Paris in 1855. The Twickenham collection was begun at the house of the Society of Arts in 1856. The food department was exhibited in embryo at South Kensington in 1857, and gave rise to Dr. Playfair's admirable food museum. The next year it was transferred to the Polytechnic Institution, where other classes were added, and in 1860 the collection was removed to the commodious building which was destroyed by fire on Wednesday week.

Building Intelligence.

CHURCHES AND CHAPELS.

BOLTON.—The foundation stone of Victoria Wesleyan Chapel, Grecian-street, Bolton, was laid on Good Friday afternoon. The new building will adjoin the old Wesleyan schools, and will be 101ft. long by 50ft. wide. The principal entrance will be on the south side, in which a double porch will open into a vestibule, extending the full width of the chapel in length and 11ft. wide. From this, on either side, the main staircases to the gallery are approached. The chapel has two aisles. The benches are open, with framed and moulded ends. The communion platform is raised, and on it the pulpit will be placed. Behind the pulpit are three vestries on the ground floor, with an additional one above, and also a side entrance and staircase to the gallery for the use of the school children. The gallery has a circular end, which extends over the vestibule, and immediately behind the pulpit is an arched recess for the organ. The roof is ceiled at the level of the collar-beam, and the principals and rafters are stained and varnished. The building is Gothic in style, and the materials used are patent bricks, with stone string-courses, arches, and other dressings. The total cost of the building will be about £5,000, and accommodation will be provided for 950 people, allowing 20in. of seat space to each person. Mr. James Martin is the contractor, and Messrs. Cunliffe and Freeman are the architects.

GREAT HORTON.—On Easter Tuesday the foundation stone of a new church, dedicated to S. John the Evangelist, was laid at Great Horton, near Bradford. The cost of the church, including the spire, which it is not intended to erect at present, is about £7,000, and towards this amount £4,500 has been raised. The church, designed by Messrs. T. H. and F. Healey, of Bradford, consists of nave, with north and south aisles and apsidal chancel, with north aisle and tower, serving for vestry and organ chamber, on the south. The principal entrance is by a south porch. The nave is 113 ft. long, the total width across aisles 55 ft., and the height from floor to ridge 57 ft. A massive tower is designed to stand at the east end of the south aisle, with spire, rising together to a height of 170 feet. The style is Early Gothic, the windows lancet-headed, with a large rose window in the west gable. The church is to be built inside and out of stone, no plaster being used in the interior, and the roofs are to be boarded. The stalls and chancel fittings will be of English oak, and the seats of deal, stained and varnished. Accommodation will be found for about 700 persons. The works have been let, and are being executed under the superintendence of the architects.

GREYWELL PARISH CHURCH.—On Thursday, the 6th inst., the Greywell parish church, which has been restored, was re-opened by the bishop of the diocese. The church, which was in a very dilapidated state, requiring extensive repairs, is very old, the tower bearing the date of 1625, and the old reading-desk that of 1624; but there is every probability that it dates from a much earlier period. It has a rood screen of carved oak, which is retained. The chancel has been wholly re-built, and the walls pierced with three windows in the Gothic style. The east window is filled with stained glass. New oak seats are placed in the chancel. In the nave the ceiling is taken away, the roof being opened to the rafters, and the windows restored. The aisle and chancel are paved with encaustic tiles. Mr. Ewan Christian was the architect, and Mr. W. Lee, of Odiham, the builder.

HECKMONDWIKE.—On Good Friday the foundation stone of a new place of worship for the Independents of Doghouse, Heckmondwike, was laid. The building will accommodate 600 worshippers. It is from designs by Mr. Hiscox, architect, Harrogate.

LIVERPOOL.—On Monday last, the foundation stone of a new chapel for a new sect, the members of which call themselves the Free Church of England, was laid at Liverpool. The style of the new building is to be Early English, and the church is to accommodate 450 persons in the body and 150 in the gallery. There will be a schoolroom underneath, which will hold 350 children, also two vestries and classrooms. The edifice will be constructed of red brick, and the front elevations will have white Stourton stone dressings. The cost is estimated at £1,600, exclusive of the land, which is valued at £300. The architect is Mr. Richard Owen, of Liverpool, and the principal contractors are Messrs. Nicholson and Ayre.

MANCHESTER.—On Easter Day, the Bishop of Manchester opened a new iron church in Alexandra-road. The building was erected by Messrs. Jones and Willis, of Birmingham, at a cost of £1,000, of which £200 remains to be raised. The edifice provides accommodation for 600 persons. The length of the nave is 85ft. and the chancel 15ft. The width is 40ft. The height to the eaves is 12ft., and to the ridge 33ft.

NORTH LUFFENHAM.—The parish church of North Luffenham, Rutlandshire, was re-opened on Easter Day, after restoration. The church contains work, or traces of work, in the Norman, Early English, and Decorated styles of Gothic architecture, the chancel being for the most part Decorated. The ceiled roof has given place to one of open timber—deal, stained and varnished; in the room of the old east window, there is a new one of five lights supporting tracery, the leading character of which is that of quatrefoiled vesicas. At the east end of the chancel, a handsome reredos has been erected, chiefly of Caen stone: between two buttresses ornamented with traceried niches, are three compartments backed with alabaster, the centre one containing a calvary in red marble, and the two outer each an arcade of three bays with Decorated tracery in the heads; surmounted by an embattled cornice, enriched with the ball flower. In the old east window have been placed various specimens of rich stained glass of the 13th and 14th centuries, apparently taken from the windows of the chancel. These consist of shields of arms and pictures under foliated canopies, and have been carefully inserted in other windows after re-arrangement and restoration. The new east window is entirely filled with cathedral glass in quarries. G. E. Street, Esq,, A.R.A., was the architect engaged, and the work has been executed by Messrs. Richardson and Messrs. Roberts, of Stamford.

OXFORD.—The renovation of the interior of S. Clement's Church is now all but completed, and a striking effect has been produced by the substitution of low open woodwork seating, instead of the old high-backed and uncomfortable pews. The chancel is confined within a low wall of Bath stone, neatly dressed, and, within, the choir-seats are of open oak work, the lectern being also of the same wood. A new altar rail has been added, this being supported with wrought-iron standards floreated. The vestry has been removed from the eastern to the western end of the church, and a new pulpit has also been added. Its base is formed of Bath stone, ornamented with three clustered columns of Devonshire marble. Above these is the podium, on the summit being an open pulpit formed of polished ebony, rosewood, and walnut columns, with carved oaken capitals, interlaced with Norman moulded arches, carrying a broad oak top, with brackets and book board. This is the gift of G. H. Morrell, Esq. The whole of the work has been ably carried out by Messrs. Honour and Castle, of Oxford, at a total cost of about £1,100.

THORNTON (BRADFORD).—A new Congregational church was opened at Thornton on Good Friday. The style is Early Decorated Gothic, and Messrs. Andrews and Pepper the architects. There are three entrances to the principal front. Over the central doorway are two double-light windows, filled in with geometrical tracery of bold design. A tower is placed at the south-west angle of the church, affording access by a staircase to the gallery, provision being made for a spire and also for a corresponding staircase, in the form of a porch or transept. The internal length of the church, including the vestibule, is 90ft., the width 42ft., and the height 36ft. The galleries are supported on light iron columns, carried up to the roof, the latter being formed in the centre with curved ribs. Accommodation is found in the church for upwards of 650 adults. The total cost of the works executed is from £2,505 to £3,000, exclusive of the site.

BUILDINGS.

CARDIFF.—On Saturday week, the foundation stone of the new premises for the *Western Mail*, S. Mary's-street, Cardiff, was laid by Mr. L. V. Shirley. When completed the buildings will comprise, on the ground floor, fronting S. Mary-street, commodious publishing and advertising offices, clerks' and managers' rooms, &c. On the first floor there will be editors', sub-editors', and reporters' rooms, waiting rooms, lavatories, &c. On the second floor will be apartments for resident porter and housekeeper. In the rear of the offices on the ground floor will be the machine and compositors' rooms, engine-house. &c. The machine room will be 70ft. long by 36ft. wide, and the composing-room will be 100ft. long, 37ft. wide, and 25ft. high, giving sufficient space for 100 compositors or more. Special attention will be given to the lighting, warming, and ventilation of the new building. The buildings will have a frontage of 42ft. to S. Mary-street. The style adopted by the architect (Mr. Peter Whyte, C.E., of Cardiff) is modern Gothic. The materials used will be Pwllypant stone for the walls, the dressings being of Bath and Mansfield stone. Mr. Samuel Shepton is the contractor.

LIVERPOOL.—On Thursday week the foundation-stone of the new Hospital for Infectious Diseases, Netherfield-road North, was laid by the Mayor of Liverpool. The new building, of which Mr. Thomas Cook, of South Castle-street, is the architect, will afford accommodation for 100 patients. It is to be built of gray brick, relieved with coloured bands and parti-coloured arches over the windows and door openings. The cost is estimated at about £6,000, besides which the amount paid for the land is about £4,000. The contractors for the erection of the building are Messrs. Haigh and Co., the following being the sub-contractors:—Brickwork, Messrs. Makinson and Glover; masonry, Mr. S. Forrest; slating and plastering, Mr. Thomas Jones; and plumbing, &c., Mr. G. Nicholson.

WINSFORD.—Mr. James Redford, A.R.I.B.A., of Manchester, and Mr. J. A. Davenport, surveyor, of Over, have jointly submitted a design which has been approved for the new Town Hall at Winsford, Cheshire. The intended site is a picturesque spot, adjoining the River Weaver and Winsford bridge. The building will be constructed on piling in the fifteenth century style of half-timbered erections, with plastering between the wall framing. No stone, brickwork, or other weighty material will be used, as novel provision will be made to lift the building when necessity arises, for by reason of the pumping up of brine (the staple commodity of the district) the buildings in the neighbourhood gradually subside, with many rents and fissures, reminding the beholder of a South American city subject to earthquakes.

ARCHŒOLOGICAL SOCIETIES.

KENT ARCHŒOLOGICAL SOCIETY.—The Council of this society held their quarterly meeting at Chillington House, Maidstone, on Thursday, the 28th ult., at which were present, the Earl Amherst, president; Mr, Godfrey-Faussett, honorary secretary; Mr. Petley, the Rev. W. A. Scott Robertson, Mr. S. Burra, Mr. W. J. Lightfoot, assistant secretary, and others. It was resolved that the annual meeting of the society should be held at Sevenoaks, and should include an inspection of the house at Knole, and the art-treasures which it contains, by kind permission of Lord Buckhurst. Several new members were elected to the society.

LINCOLNSHIRE DIOCESAN ARCHITECTURAL SOCIETY.—A preliminary meeting of the local committee of the Lincolnshire Diocesan Architectural Society was held on the 28th ult., the Mayor in the chair. It was proposed that the annual meeting of the society should be held on the 22nd and 23rd June, and on the first day to visit the churches in following places: Newark, Kelham (and Hall), Averham, Upton, Hockerton, Caunton, Norwell, Carlton-on-Trent, Sutton-on-Trent, Cromwell, and North Muskham. In the evening there will be a public meeting in the Town Hall, and papers will be read on places of interest in the locality. On the 23rd Newark Castle will be visited, also the following churches:—Hawton, Balderton, Claypole, Stubton, Fenton, Broughton, Beckingham (and Manor House), Barnby, and Coddington. After the second day's excursion there will be a public dinner in the Corn Exchange. Subsequently in the Town Hall further papers will be read, and a museum of antiquities and curiosities will be open.

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The Bible Christian Chapel, Camborne, is in course of reconstruction, under the directions of Mr. J. Hicks, of Redruth, architect. The works consist of reseating the ground floor, new galleries, open timber roof of curved hammer beam principals, staircase tower, having a slated spire rising to the height of sixty-five feet from ground, new vestry, and other works. The cost will be about £500, and accommodation will be provided for 520 persons. The builder is Mr. Samuel Richards, of Falmouth.

A new Wesleyan chapel has just been completed at Silsden. It is designed to seat 500 persons, and has cost, including fittings, £2.600. The style is Decorated. "An Architectural Student" sends us a cutting from the *Keighley News* as a sample of the general run of newspaper reports of new buildings. Referring to this chapel, that journal says:—"The exterior, which is in the Gothic style, is pleasing and unpretentious. The doorway, which supports on small Corinthian columns an elegant ornament, is surmounted by a spacious and handsome five-light Gothic window, flanked on the right by a graceful steeple of slender construction."

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—E. T., R. W., jun., R. A., T. R., C. B. A., G. T. R., T. C.

Erratum.—Pendleton Presbyterian Church Competition.—In the notice of this competition which appeared in our impression of the 31st ult., Messrs. Ellis and Hinchcliffe were named as competitors. We should have said Barker and Ellis. The first mentioned firm are, we are given to understand, stonemasons, and not architects.

M. Agar.—Read the notice again. Does it not state that *we* are giving the series of articles on Viollet le Duc's great work? The price of the work in paper covers is £12 12s.

A. F. Sprague.—An illustration of the Albert Memorial in Hyde Park has not appeared in the Building News.

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Correspondence.

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ARCHITECTS' CHARGES.

To the Editor of the Building News.

Sir,—For the information of your correspondent "An Ill-used Architect," allow me to give an opinion and experience which I hope may be useful. The first clause in the Institute document, which must be regarded as the contract in this case, specifies that "the usual remuneration for an architect's services, except as hereinafter mentioned, is a commission of 5 per cent. on the total cost of the works executed from his designs, &c." Further on, we have sundry exceptional cases mentioned, one being clause 12, under the heading "Alterations in Design:" "If the architect should have drawn out the design complete, ready for estimate, the charge is half the usual commission above named;" and further, clause 13; "If the architect should have, in addition, procured tenders, the charge is one-half per cent. extra to the above."

Now it is evident, under these clauses, that had the client chose to suspend operations when the tenders were received the architect would be entitled to 3 per cent. of the 5; and beyond all question he must be paid that at least. But then the work went beyond that point, a contract being entered into, the details being prepared, and the architect having commenced and being ready and willing to do his part in order to give the client full value for the remaining 2 per cent. As there is no clause in the contract to subdivide this, and it being a maxim of our law that "an entire contract cannot be apportioned," he is entitled to the whole of it, and did quite right to send in his account for the full 5 per cent. which, if he is firm, he must be paid. It is exactly on the same principle that any other employé engaged for a certain time or to do a certain work, and dismissed before the completion of the time or work, sends in his claim for, and has to be paid, the full amount of his agreement. Instances of this occur every day; and the wonder is that any one can be ignorant of such elementary principles of justice and law. I rather think that in this instance the client would feel very much aggrieved had the architect chosen to throw up the work in the middle of it; and the latter would find that he could not recover his fees in such a case, even for the part he had done.

In a nearly similar case which occurred with me some years ago, I took the advice of eminent counsel, who directed me to send in my account for the full 5 per cent., and on its being refused, to issue a writ with two counts—one in the ordinary form for "wrongful dismissal," and the other for "work and labour." The client and his solicitors talked very big for a while, and pretended to laugh at such an absurd claim as they called it; but, on referring the matter to equally able counsel on their own side, they were advised to pay the amount forthwith, which they had to do, with costs to my solicitor, within twelve days of the service of the writ.

If your correspondent be "ill-used" any longer after the above information is given him, he will only have himself to thank for it. A case somewhat similar was decided in the Courts at Westminster, Mr. Bassett Keeling being the plaintiff; but there were plenty of others, and, in fact, the principle is so obvious as to need no great reference to cases to make it manifest. If his solicitor takes active steps, as mine did, he will probably be paid without any more trouble.—I am, &c., F. R. I. B. A.

Sir,—I think "An Ill-used Architect" scarcely makes out a case of bad treatment. He seems, on the other hand, to be entirely in the wrong. It was surely a mistake to claim "the full 5 per cent." under the circumstances described in his letter of the 7th inst. That commission would include superintendence to completion, but the work has not been completed. A mere declaration that the architect will be ready and willing to do all that can be required of him in completing the work whenever it may suit his client to proceed does not justify a present claim for the labour unperformed. A commensurate allowance should be made and charged when the full services have been rendered. The 5 per cent. when dissected is commonly made to comprise $2\frac{1}{2}$ for drawings and specifications, another half when tenders are obtained, and a further half, perhaps, when a contract is fully entered into. This leaves for the duty of superintendence from $1\frac{1}{2}$ to 2 per cent To avoid litigation by reasonable sacrifice is always commendable, and here the superintendence may be allowed for at the rate of 2 per cent. One third of the work having been done under the contract, the full commission is so far chargeable. On the remaining two thirds there has been no superintendence, and the abatement is consequently 2-5ths of 2-3rds = 4-15ths, or 5s. 4d. in the pound on the whole amount.—I am, &c.,

Thomas Morris.

BUILDERS v. ARCHITECTS AND CLIENTS.

Sir,—Most of your readers will, I imagine, sympathise with "An Ill-used Architect" under the hard circumstances of the case which he submits to the public in your last issue. With your permission, I should like to draw attention to another case of hardship, not an unusual case, but one of every-day occurrence.

About three years ago a contractor, on the completion of a large building, was ordered to send in the accounts to the architect. The accounts were delivered, and after maintaining profound silence for seven months, the architect, without giving notice to clients or contractor, suddenly visited the building, and made an account of his own. He took the contractor's bills as a basis, and divided each item by six, setting down the result as the full value of the work. This rule was adhered to in the deductions also, except that the sum in the contractor's account was multiplied by six, and the product subtracted from the architect's value of the work. This extraordinary mode of making an account reduced the balance due to the contractor to a mere nominal amount, which he very naturally refused to accept as a settlement of his claim. A certificate of completion was then asked for, to enable the contractor to take law proceedings. Not until a month ago would the architect condescend to reply, and then, after a delay of two years, the certificate was sent, dated on the day it was written, nearly three years after the work was finished. The conditions of contract prevent any action being taken until three months after the date of the certificate of completion; hence he was asked to alter the date to avoid further delay. No reply has been received, and consequently the contractor must again wait till the time has expired before he can seek any remedy.

I have simply related the dry facts of the matter, in the hope that your readers may carefully consider the case, together with that of "An Ill-used Architect." A free expression of opinion on common and uncommon abuses of these kinds might go some little way towards removing them.—I am, &c.,

Surveyor.

BOURNEMOUTH PLEASURE GROUNDS COMPETITION.

Sir,—Some time ago an advertisement appeared in your and other journals inviting architects and others to send in designs for the proposed pleasure grounds at Bournemouth. In compliance with this notice, I prepared a set of plans and forwarded them to the Commissioners. About four or five weeks ago it was announced publicly that the plans of certain parties had been selected, and subsequently I received a notice (about three weeks ago) that the other designs would be returned. I accordingly wrote to the Surveyor of the Commissioners to know if the plans would be exhibited or whether the competitors would have the privilege of inspecting the premiated designs. No notice was taken of this, nor indeed of three or four subsequent letters written to him and the Clerk respecting the plans, which have not been returned, and I am at a loss to know what cause there is for such delay. Moreover, the instructions issued to competitors stated that if any further information was required it could be obtained at the office of the Commissioners. This information, however, was never accorded to me, as I wrote two letters to the Surveyor of the Commissioners, who had not the courtesy to send a reply. I am, therefore, compelled to ask through your pages the course I am to pursue, or if other competitors have been served by these officials in the same polite and gentlemanly manner.—I am, &c., G. H. G.

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Intercommunication.

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QUESTIONS.

[2190.]—**Wells.**—I should feel obliged if any reader can inform me of the simplest and cheapest method of forming a well, through gravel and chalk, about 30ft. deep. Whether boring, driving, or digging. Small supply only required. I have thought of Norton's tube-well, used in Abyssinia, but am rather in doubt about it.—J. S.

[2191.]—**Preserving Distemper Decorations.**—Could any reader inform me if there is any way of preserving decorations in distemper on plaster from the effects of gas and smoke, or any application by which the surface can be rendered permanently washable without too much glaze?—J. S.

[2192.]—**Washing White Brick Houses.**—Will you or some of your numerous readers give me some information as to the best means to wash down the exterior of a white brick house? I have used water and soap, and find that this does not get out the black stains.—Inquirer.

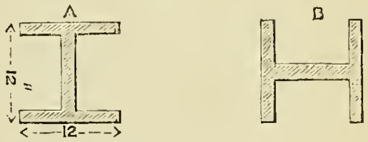
[2193.]—**Problem.**—Will one of your correspondents explain how this is done? If in the $\underset{B\ a\ C}{c\overset{A}{\Delta}b}$ A B C, $\angle C = 34° 42' 30''$, and side $a = 210$, and $b = 110$. Find the other angles, having given log 2 = ·3010300, and L cos 17° 21′ 15″ = 10·5051500.—H.

[2194.]—**Drawings of Labourers' Cottages.**—Can any of your numerous readers inform me whether there are any drawings of labourers' cottages published, and where they are to be procured?—F. L. P.—[At least a dozen have, from time to time, appeared in the Building News. Ed.]

[2195.]—**Brickwork on Paper.**—In your "Intercommunication" of some seven months ago I noticed a method of accurately representing brickwork on paper; but, having mislaid the paper, would some kind correspondent repeat it? I have laid on a compound of Venetian red and crimson lake, and shown the joints by lines of flake white, which require repeated applications to make the joints visible; whereas, in the method referred to, I fancy one application by the drawing pen of a proper water colour would suffice.—R. C.

REPLIES.

[2168.]—**Strength of Girders.**—The following calculation will show accurately the different breaking weights of the girder in the two positions. To begin with A. Here the girder is a flanged girder, not of the best shape, as there is a considerable waste of metal in the top flange; but this does not interfere with the calculation, which is based upon the strength of the bottom flange. Let W = breaking weight at centre in tons, A, the number of square inches of sectional area in the bottom flange; L, the span; D, the depth; and, C, a constant. By Hodgkinson's rule we have—



$$W = \frac{A \times D \times C}{L}.$$

Substituting the values in the question—

$$W = \frac{9 \times 12 \times 26}{20 \times 12} = 11.7 \text{ tons}.$$

Now for the case B. Here the girder consists of two rectangular beams, which, being united by the cross piece, may be considered to act as one. Putting B for the breadth of the beam, and using the same letters, we have, for one beam—

$$W = \frac{B \times D^2 \times C}{L} = \frac{0.75 \times 144 \times 0.9}{20} = \left\{\begin{array}{l}48.6\\ \text{tons}\end{array}\right.$$

The whole girder has a breaking strength, therefore, of 2 × 4.86 = 9.72 tons.—Check.

[2172.]—**Competition.**—In answer to "F.'s" query about the competition for the Victoria Hotel, Coatham, Redcar, I—being one of the competitors—can only say that I have not yet received any further communication from the secretary than that he is sorry I have been unsuccessful, and that my drawings have been returned to me. The drawings were returned in the morning of one day, and this note did not arrive till the evening of the next day. The competition was a public one, and yet none of the competitors and none of the public were allowed to see the drawings. I know of one gentleman who saw them by permission of one of the directors, and perhaps more could have seen them by going through the same process; but I should have thought that, in simple justice to the competitors and the public, there would have been a public exhibition. Another competitor whom I know is quite as dissatisfied as I am with the way in which we have been treated, and I should advise all competitors who have received no further communication from the secretary than that he is sorry they have been unsuccessful, and their drawings are returned, to write again, and ask for the information which "F." wants—*i. e.*, the result of the competition. Architects are not quite such selfish fellows as some people appear to think them, and, when Fortune does not favour them, they are anxious to know who has gained her fair smile. I have forgotten to say that I have heard that, though competitors were hurried most injuriously—both as regards their designs and their health—the drawings were hung for two weeks before the directors met together to inspect them.—G.

[2176.]—**Strength of Girders.**—The reason that the depth of a girder at the centre is often greater than at the ends is, that the strain on the flanges is greatest at that point, being inversely proportional to the depth. It is not so with the strains on the web, which are least at the centre, and greatest at the end; and are, moreover, independent of the depth of the girder. The advantage of curving the top flange of a girder is that it saves metal in the flanges towards the ends. By making the strains throughout the flanges rather more uniform, it utilises the excess of metal which must practically be put there, although not absolutely required by theory. The strains on the arched member must be obtained by a carefully constructed diagram, as the ordinary formulæ do not apply.—Engineer.

[2187.]—**Pocket Gauges.**—"Frank" is informed that he may obtain gauges of the thickness of lead at Fenn's, Newgate-street. Mr. Edmeston, the architect of the Vieille Montagne Zinc Company, of Crown-court, Old Broad-street, provides a very handy gauge for those who adopt his method of zinc roofing.—A. H.

LEGAL INTELLIGENCE.

Architects' Charges. — At the Westminster County Court on Wednesday week, the case "Phipps v. Robertson" was heard. The plaintiff, Mr. C. J. Phipps, architect, sued the defendants, Mr. William Wybrow Robertson and Mrs. Robertson, for work done as architect in connection with the New Court Theatre. The claim was £45 3s. 6d.; and the defendants paid fifteen guineas into court. Mr. Laxton, barrister, appeared for the defence; and Mr. Francis for the plaintiff. Mr. Francis having briefly opened the case, explaining the circumstances of the claim, Mr. Phipps said: I am the plaintiff in this action, an architect, and a Fellow of the Institute. I have been in practice for fourteen years, and was architect for the Queen's, the Gaiety, the Vaudeville, the Variety, and many other theatres. On an interview Mrs. Robertson explained that she wished me to prepare plans, estimates, &c., for the Court Theatre. No further details were then gone into. I proceeded to make out the plans. They were the ordinary and proper plans which an architect would prepare for these works, and sufficient for tenders upon them to be made by the builders. The actual builders' work was £1,459. The plans were afterwards fully examined by defendants; no objection was raised as to them, and as far as I was concerned I considered the matter settled. I subsequently heard that another architect, Mr. Emden, had been engaged, though I had no such intimation from the defendants. The plans were returned to me on November 10 by Mr. Robertson. 2½ per cent.—my charge—is usual and reasonable, and I have been paid it before without demur. I have charged this only upon £1,459, and not upon the whole cost, as I did not wish to make a long bill. Whether the work is abandoned or another architect is employed, 2½ per cent. is the usual charge.—Mr. Chas. F. Hayward, architect, and member of the Royal Institute of British Architects, said he was acquainted with the ordinary charge of architects. Those made by Mr. Phipps were the proper professional charges. The defence was that Mr. Phipp's plans would have cost more than the sum originally agreed upon; but the judge gave a verdict for the plaintiff for the whole amount claimed.

WATER SUPPLY AND SANITARY MATTERS.

Watering the Streets of Westminster.—At a special meeting of the Westminster Board of Works, on Friday week, convened for the purpose of receiving a report from the Street Cleansing and Sanitary Committee, submitting a letter from Mr. Cooper, stating that, in the event of the Board deciding to use his patent salts for watering the whole of the district during the ensuing season, he would agree to supply 200 tons of salts for the sum of £500, and undertake the supervision of the watering of the streets at his own expense, and to carry out the work with ten horses and carts, the Committee's recommendation that Mr. Cooper's offer should be accepted by the Board was adopted.

The Lambeth Potteries.—"A Surgeon" writes to the *Times* to complain of the dense volumes of smoke rolling northward from the Lambeth Potteries over Lambeth Palace and S. Thomas's Hospital, occasionally almost obscuring those buildings from view. This so-called smoke is, this correspondent says, for some reason, more dense on Fridays than on other days, and consists largely of arsenical fumes, which tend to devitalise and wither up every living thing with which they come in contact. It is, he thinks, clearly the duty of the Metropolitan Board of Works to take whatever steps may be necessary to change this state of things.

Disinfecting Apparatus in Crowded Localities.—An injunction has been obtained for restraining the Vestry of S. Pancras from erecting a disinfecting chamber in Somers'-town, on property of which Lord Somers is the ground landlord. The *Lancet*, referring to the subject, says:—"We do not believe there is the slightest danger or nuisance in such an erection if proper precautions are observed, and there is a certain fitness in placing it in densely crowded localities, where it is most frequently required. Indeed, the real danger to the public is increased by placing the apparatus in a position which requires the infected clothes to be removed long distances through the streets. The objection is, therefore, due rather to local ignorance and prejudice than to an intelligent appreciation of a public need, and we regret that Lord Somers should have lent himself to give those prejudices a practical effect."

Barnet and Hadley Sewage.—At a recent meeting of the Joint Committee of the Barnet Local Board and the Hadley Vestry, it was resolved that Mr. Bailey Denton should be authorised to survey and report what, in his opinion, should be done to get rid of the sewage difficulty in those places.

Bridgwater.—The preamble of the Bridgwater Water Bill, which has for its object the better supply of water to the town or district, was proved before a committee of the House of Commons on Friday week.

Taunton.—The annual meeting of the shareholders of the Taunton Water Works Company was held last week. The report stated that soon after the last annual meeting the new reservoir was completed, at a cost, together with other necessary works, of £1,820 17s. 1d., the whole of which outlay had been paid out of income. The balance sheet for the year 1870 showed a balance on the income account of £504 13s. 5d., from which sum the directors recommended the payment of a dividend on the share capital at the rate of £4 per cent. per annum, free of income tax. The report was adopted.

Cubic Space of Cowhouses.—A difference of opinion has arisen between the S. Pancras Vestry and the magistrates of the district as to the amount of cubic space which ought to be provided for the accommodation of cattle. The Vestry think that 700 cubic feet is sufficient for each cow, but the magistrates hold, with Dr. Stevenson, the Medical Officer of Health for the district, that it would be unwise to reduce the breathing space for each animal below 1,000 cubic feet.

Unhealthy Dwellings in the Holborn District.—At last the Holborn Board of Works has resolved to take proceedings under Mr. Torrens's Artizans' and Labourers' Dwellings Act, which in this, as in other districts, has too long remained practically a dead letter. At a recent meeting of the Board, the surveyor (Mr. Lewis H. Isaacs) recommended the total demolition of some dilapidated and unhealthy dwellings in Union-court, Saffron-hill, and the owners are required to show cause why the buildings should not be accordingly razed to the ground.

The Metropolis Water Bill.—The Paddington Vestry have decided to petition against the Metropolis Water Bill, in order that they may have a *locus standi* to oppose some of the provisions of the measure in committee. The Vestry seems generally in favour of a Bill to provide a constant supply of water to the metropolis, but the members are almost unanimously opposed to giving the Metropolitan Board of Works power over the plant of the existing water companies. The S. Pancras Vestry has also petitioned against the Bill. The Newington Vestry, however, has passed the following resolution:—"That in the opinion of this Vestry a constant supply of water for the metropolis is desirable. That the supply should be distributed under regulations, and subject to the control of a metropolitan authority."

LAND AND BUILDING SOCIETIES.

The Conservative Land Society. — The quarterly meeting of the shareholders of this society was held at the offices, Norfolk-street, on Tuesday fortnight, Viscount Ranelagh in the chair. The chairman, in moving the adoption of the report, congratulated the shareholders on their prospects for the financial year, six months of which have now elapsed. In the first place, their receipts were quite up to the mark; the demands for building advances were more than ample, and the starting of a system of periodical sales by auction to realise their securities must act advantageously. In fact, the society had grown to that extent that it was more economical to have their lawyer and surveyor and their own auctioneer on the premises than to trust to out-door assistance. When the society was originally formed, now nearly twenty years since, its ultimate aim of effecting a general good was little thought of. It must be remembered that they started as a political society only. The executive committee, with many years' experience have tested its political action as a land society. Socially it was essentially Conservative in its nature, because property always involved responsibility. It would be a rotten foundation to rest a commercial undertaking on political support only. Sir L. Palk seconded the resolution, and it was unanimously carried. A vote of thanks was tendered to the chairman, vice-chairman, and members of the executive committee.

Eastern Mutual Building Society.—This society, which is, as its name implies, a mutual or terminable building society, had its sixth annual meeting at its offices, 12, Red Lion-square, W.C. on Wednesday evening, the 22nd of March. Mr. C. H. F. Lewes, architect and surveyor in her Majesty's office of Woods and Works, presided, and moved the adoption of the report and balance-sheet. The report stated:—"Your directors have much pleasure in presenting the sixth annual report and statement of accounts of the society. The cash at the bankers, it will be seen from the accounts, amounted at the end of the financial year to £1,055 3s. 10d., the whole of which sum has been appropriated. Your directors have fixed the entrance fees for the ensuing year as follows:—On A shares, £2 per share; on B shares, 7s. 6d. per share; and on C shares, 1s. per share. Your directors beg to express their great satisfaction at the manner in which the members having obtained appropriations from the society have made their returns, there not remaining unpaid at the end of the financial year a single shilling that was due on that account." Mr. Wood having seconded the adoption of the report and statement of accounts, it was put and carried unanimously. By the rules of this society the whole of the directors retire annually, but are eligible for re-election. The following past directors, Messrs. P. E. Van Noorden, C. H. F. Lewes, W. F. Potter, Abraham, H. K. Millard, Mosely, W. Wood, G. Haselden, Montague Scott, and Robinson, were unanimously re-elected; and Messrs. Baker and John Hardy were elected to supply two vacancies. Messrs. Henry Colls, John Baker, and J. A. Haselden were elected the auditors of the society for the ensuing year. Votes of thanks were then passed to the directors, auditors, chairman, and secretary (Mr. J. H. Shead), and the proceedings then terminated.

Clerkenwell.—At the annual dinner of the St. John's United Benefit Building Society, held recently, the secretary said that during the period that the society had been established they had issued 500 shares, and an appropriation had been made with the recurrence of every quarter. The total sum received was £2,000, and a profit of 12½ per cent. was divisible amongst the members.

Adelphi Benefit Building Society. — This is the name of a new society which has just been started under promising auspices. The names of the arbitrators, trustees, and others who have identified themselves with the society form a good guarantee as to its being established in good faith. Mr. George Howell is the secretary, and the office is at 9, Buckingham-street, Adelphi.

Lambeth Permanent Benefit Building Society. — The nineteenth annual meeting of this society was held on Wednesday fortnight, at Wilcocke's Assembly Rooms, Westminster-bridge-road. The report stated that notwithstanding the great depression of the past year, and the continued depreciation in house property, the business of the year was nearly equal to that of any of the preceding years of the society's existence. The total amount now advanced from the commencement of the society was £114,840. The total number of shares at the last annual report was 3,080½; during the past year 318 new shares had been taken, 154 withdrawn, 56 realised, 65½ redeemed, and 4 forfeited, leaving a total of 3,119. Of this number 1,200 were advanced, and 1,919 invested, shares. The deposit account had progressed satisfactorily, and the directors had reduced the interest on deposits to 4 per cent. The receipts were stated to be £28,478 14s. 3d., and the expenditure £27,309 9s. 6d., leaving a balance at the bank of £1,000 on deposit, and £169 4s. 9d. current accounts. The report was adopted.

Exeter Freehold Land Society.—The fourteenth annual meeting of the members of this society was held on Tuesday fortnight. The balance-sheet showed the total receipts to have been £9,034 11s. 4d., and the payments to have been £14,129 17s. 10d.; the sum lent on mortgage amounts to £6,073, being an increase of £2,055, and the profit realised, after paying all expenses of management, is £988 18s. 3d., which enabled the committee to declare a dividend of £5 per cent. per annum, leaving a balance of £90 in favour of the current year's account. The number of members on the register is 866, subscribing on 1,485 shares, being an increase of three on the former and 146 on the latter; 135 members have joined the society during the year.

Hinckley and County Permanent Building Society.—The members of this society held its anniversary on the 22nd of March. The reports read showed that the society had been doing business on a very large scale, and was in a very prosperous condition, being the oldest society in the town. Some discussion was elicited as to the division of profits, when it was found that some of the last shares of withdrawal had gone a much longer period than those on the first out-going members.

STAINED GLASS.

Martock.—A stained glass window has just been placed in the east end of the chancel of Martock Church. The window is illustrative of scenes in the life of our Lord, and cost £250.

Wymeswold.—A committee has been formed for the purpose of collecting subscriptions for placing a stained glass window in the south aisle of the parish church of Wymeswold, in memory of the late Dean Alford, who was for eighteen years the vicar.

Kibworth Beauchamp Church, Leicestershire.—A stained glass window has been placed in this church, designed and executed by W. Holland and Son, Warwick. It is of three openings, which are treated with one subject extending over them, of the raising of Lazarus, under foliated canopies of the ivy and passion flower; in the tracery are angels bearing scrolls with texts. A brass plate fixed underneath explains the object of the memorial.

Birmingham.—The windows over the main entrance to S. Nicholas Church, which occupy a corresponding position to what would be the west end in most churches, which have just been filled with stained glass, were unveiled on Palm Sunday. The principal window, which is a very large one, consisting of three lights, has been enriched with figures of the Twelve Apostles, on diapered backgrounds of ruby, blue, and yellow, the whole being filled in with grisaille ornament and enclosed in a border. A circular window above has been treated after the same manner, and in the centre of it is placed, as one of the symbols of Divine inspiration, a figure of the descending dove. A small opening below, immediately over the doorway, contains the Greek cross, the emblematic triangle, and the passion flower, symbolising some of the cardinal doctrines of the faith, with a reference also to that branch of the Church to which S. Nicholas belonged. The figures of eleven of the Apostles came into the possession of the Window Committee by accidental circumstances; and the task of completing their number, and of adapting them to their place, together with all the rest of the work, has been executed by Mr. Swaine Bourne, of King Edward's-road.

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STATUES, MEMORIALS, Etc.

Alloa.—A handsome monumental brass, provided by Lord Kellie as a memorial of his cousin, the late Earl of Mar, is about to be placed in the floor of S. John the Evangelist's Church, Alloa. The work, which has been designed by Mr. R. Anderson, architect, Edinburgh, consists of an oblong brass plate, intended to be inserted in a polished slab of black marble. Round the margin runs a broad border, containing the inscription. The corners of the tablet are finished with small circular shields, bearing, within trefoils or quatrefoils, the Mar and Kellie crests. Smaller circles, above and below, present the late Earl's monogram, and the general groundwork of the design is filled in with rich diapered ornament.

Monument to Mr. Ernest Jones.—Shortly after the death of Mr. Jones, a subscription was opened for the benefit of his family, and to erect a monument to his memory. A sum of £2,250 was subscribed, and of this amount £100 was set apart for the erection of a monument in Ardwick Cemetery, Manchester, which was uncovered on Saturday in the presence of a vast concourse of people. The monument is of gray granite, stands twelve feet high, and is surmounted with a draped funeral urn. Below the left panel is the name of the deceased and the following inscription:—"Full of warm sympathies and generous desires, he freely toiled and suffered in behalf of the wronged and oppressed, and made himself a name honoured and beloved by the people whose welfare he sought through life, and in whose service he met an untimely death."

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A Hindoo Temple in London.—According to the *Bombay Gazette*, it is probable that a Hindoo temple will in a few years be erected in London. There was a meeting of influential natives held in Jooaghur (in Kettyway) a few weeks ago, at which it was resolved to raise a subscription for the purpose of encouraging and assisting young Hindoos who desire to go to England for the purpose of finishing their education. A respectable vernacular paper in Bombay assures us that a temple of Hurkeshwur Mahadew is to be erected in London out of the fund, about a lac of rupees being set apart for that purpose.

Blandford Building Operatives' Benefit Society.—The second septennial distribution of the capital of this society took place on Saturday week, when £230 was divided amongst the 155 members who were "good" on the books of the society on the 25th of March last. The sums received by the members varied from £1 17s. 6d. to 4s. 6d. The principle regulating the division was that the balance of each quarter during the seven years should be divided between the members good on the books at the end of the quarter, and at the end of the seventh year.

Our Office Table.

A New Illuminating Gas.—Dr. Letheby has reported upon Dr. Eveleigh's method of producing gas at a low temperature in iron retorts. The peculiarity of the manufacture consists in the distillation of the coal at a low temperature, and the subsequent conversion of the volatile constituents of the tar into permanent gas. This gas is much less offensive than ordinary gas, and it is so rich in hydro-carbons that it cannot be burnt from a standard argand burner with fifteen holes and a 7in. chimney at a larger rate than four cubic feet per hour, giving at this rate the light of 15·7 standard sperm candles.

The Proposed Mortuary for the City of London.—At a late meeting of the City Commissioners of Sewers, it was resolved to erect a mortuary upon a plot of land, already secured in Golden-lane, Barbican, the cost of such erection not to exceed £5,000. At the meeting of the Commissioners on Tuesday week, the matter was again discussed, when, on the motion of Mr. F. S. Richards, it was resolved to defer the commencement of the necessary works until Lady Day, 1872—the object being, apparently, to shelve the matter altogether. It was contended by the mover that a temporary mortuary, which had already been built, was sufficient for all purposes, inasmuch as only one dead body had been placed in it since its erection.

Steam Boiler Inspection.—The Liverpool Polytechnic Society has been drawing attention to the necessity of the inspection of steam boilers. In the last four years there appears to have been 219 explosions, killing 315 persons, and injuring 450 more. The Society has published a memorial to Mr. John Hick, M.P., Chairman of the Parliamentary Select Committee on Steam Boiler Explosions, urging the necessity of making the inspection of boilers compulsory.

Migration of Labour.—Mr. E. G. Davenport writes that he is desired by an eminent firm of contractors, who are now constructing some heavy railway works in the midland counties, to make known as widely as possible that they are ready to engage, at 3s. to 3s. 9d. per day, any number of navvies up to 1,500, who may apply to them on the works. Further particulars can be obtained by application at any of the district offices of the Society for the Organisation of Charity, of which the addresses can be learnt from any policeman, or at any workhouse, or by written application to Mr. E. G. Davenport, at 28, Lancaster-gate, W. It is necessary to state that none but thorough navvies or out-door labourers accustomed to the use of pick and spade will be taken on.

Industrial Partnerships.—The Encaustic and Tesselated Tile Works, Jackfield, Shrewsbury, have lately passed into the hands of a new company, of which Mr. A. H. Brown, M.P., became a member on condition that the principle of allowing the men a share of the profits of the concern should be adopted. The company, according to the *Shrewsbury Chronicle*, have obtained a fresh lease of the property, and are about to expend some £10,000 in building and machinery, which cost will be distributed over the period for which the lease is taken —which is for sixty years—in order that the men who are admitted to an interest in the concern should, over and above their wages, participate in the profits made from year to year.

Proposed New Poultry Market for the City.—At a meeting of the Court of Common Council, on Wednesday week, the Markets Committee presented a report recommending that a Poultry Market should be constructed upon the vacant land belonging to the Corporation adjacent to the new Metropolitan Meat Market, at a cost not exceeding £25,000, and that the Committee should be authorised to prosecute the Bill introduced into Parliament with the view of obtaining powers for effecting that object, and for dismarketing the present hide and poultry markets. The report of the Committee was adopted, and referred back for execution.

Hackney and the Dust Contractors.—The Hackney District Board of Works doubt the probity of the dust contractors, and, notwithstanding that tenders were sent in, have resolved to employ carts at 9s. a day. Four years ago the contractor paid for the dust, last year the parish paid £860, and in the tenders sent in the lowest price for the East and West Divisions is nearly £2,000. One member of the Board, according to the *Parochial Critic*, distinctly charged the contractors with having "cooked" the tenders. The combination is to be resisted, and the cheques and bank notes in the tenders were returned to the "cooks."

MEETINGS FOR THE ENSUING WEEK.

Monday. *Royal Institute of British Architects.* "On the University College of Wales, and other Buildings at and near Aberystwith." Mr. J. P. Seddon, 8 p.m.

Society of Engineers. Discussion on Mr Baldwin Latham's paper "On the Ventilation of Sewers." 7.30 p.m.

Tuesday. *Institution of Civil Engineers.* "On the Archimedean Screw Propeller, or Helix, of Maximum Work." By Sir Francis Charles Knowles, Bart., M.A., F.R.S. 8 p.m.

Wednesday. *Society of Arts.* "On the Economical Construction of Workmen's Dwellings, and especially in reference to Improving the Health and Habits of the Class." By Dr. Stallard. 8 p.m.

Thursday. *Society for the Encouragement of the Fine Arts.* "For and Against Shakespeare." By Dr. Doran, F.S.A. 8 p.m.

Friday. *Architectural Association.* "On the Treatment of Terra-Cotta." By Mr. J. T. Perry, A.R.T.B.A. 7.30 p.m.

Civil and Mechanical Engineers' Society.. "On Metallurgy and Mining in Poland." By Mr. G. Eedes Eachus, Assoc. Inst. E.E. 7.30 p.m.

Saturday. *Museum of Practical Geology, Jermyn-street, St. James's.* Swiney Lectures on Geology. Lecture VII. by Dr. Cobbold, F.R.S. 8 p.m.

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Chips.

The inhabitants of Glastonbury have decided to adopt the Local Government Act.

Mr. Pyle, an old and respected builder, of Tiverton, died suddenly at his residence, Belmont-terrace, on Monday morning last. He was in his eighty-first year.

The works in connection with the new cottage hospital at Yeovil have just been commenced by the contractor, Mr. Frederick Cox.

A new church school is about to be erected at Redruth for the Rev. J. W. Hawksley, rector. The walls will be of local hammer-dressed facing stones, and granite dressings, the roof to be of open timber work varnished. Accommodation will be provided for 210 children. The architect is Mr. Hicks, of Redruth.

The Third Duke of Cornwall's Rifle Volunteers (Falmouth) are about to erect a commodious drill hall, 100ft. long, 40ft. wide, with armoury, sergeant's residence, &c., attached. The funds are provided by a limited liability company, of which the volunteer officers and men are the principal subscribers. Mr. Hicks, of Redruth, is the architect.

Following the example of Sir Benjamin Guinness, Mr. Henry Roe has undertaken the cost of restoring the second cathedral of Dublin, Christ Church. The work, it is estimated, will cost £50,000.

A new chapel is in course of erection at Silsden for the members of the United Methodist Free Church. Accommodation will be provided for from 400 to 500 persons. There will be a school beneath the chapel for 150 scholars. The total cost of the erection will be £800.

The next election of pensioners on the funds of the Builders' Benevolent Institution will take place on the 25th of May next. We regret to hear that Mr. A. G. Harris, the secretary of the institution, has been confined to his room by illness for the past two months.

It is proposed to restore the parish church of Potterne. The Ecclesiastical Commissioners have undertaken to restore the chancel.

The Mayor of Weymouth has reported to the Town Council that the British Archæological Association had decided to visit the town during the ensuing summer.

The equestrian statue of General Scott, ordered by Congress, is completed at Newburg, New York. It cost 30,000 dollars.

The first steps towards the restoration of the magnificent choir of the Abbey Church, Tewkesbury, have been taken by a Dissenter, Mr. T. Collins, who has undertaken, at his own cost, to restore the original oak walls, and to add whatever may be required, "by reason of his veneration for the building and his love of mediæval architecture."

A disinfecting chamber has been erected by Messrs. Fraser for the Rotherhithe Vestry.

The post of Inspector of Nuisances in the S. George's Hanover-square, district is vacant.

The North Metropolitan Tramways Bill was read a second time in the House of Commons on Monday week.

A proposal to widen King William-street, City, by removing a part of the base of the King William statue, is under the consideration of the City Commissioners of Sewers.

Mr. Thomas Landseer, the veteran engraver, is engaged on "The Life and Letters of William Bewick, the artist." William Bewick was a kinsman of the celebrated Thomas Bewick, the wood engraver.

Signor Michele Manucci, director of the *Giornalle delle Arti e delle Industrie*, died at Florence a short time back, aged forty-seven.

The following gentlemen have been elected Fellows of the Society of Antiquaries:—Messrs. G. Bonnor, J. Rae, J. L. K. Oliphant, J. S. Swan, J. S. Rawle, J. W. Holme, J. A. Rolls, V. D. H. Cary-Elwes, and Colonel J. Bayly, R.E.

Mr. Robert Furness has been elected by the S. Pancras Vestry as the representative of that parish at the Metropolitan Board of Works, *vice* Mr. Silas Taylor, deceased.

The *New York Druggist's Circular* says that borax is superior to everything else for exterminating the cockroach. The smell or touch of borax is said to be certain death to them.

Messrs. Albert Goodwin, W. H. Hale, A. B. Haughton, H. S. Marks, A.R.A., R. W. Macbeth, and J. W. North, have been elected Associates of the Society of Painters in Water Colours.

On the 24th ult. died Mr. George Nicol, formerly secretary to the directors of the late British Institution. Mr. Nicol was in his sixty-third year. On the same day Mr. Thomas Agnew, long known as a picture-dealer and print publisher, of London and Manchester, breathed his last, in the seventy-sixth year of his ago.

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Timber Trade Review.

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Prices, April 11.—Per Petersburg standard—Quebec yellow pine, 12ft. 3 × 11, first bright, £19 15s.; ditto first dry floated, £18 15s. to £19; second bright, £14; third bright, £9 5s. to £9 10s.; third floated, £9; third dry floated, £9 10s.; Holmsund third yellow, £8 to £9; Kopmausholmen mixed yellow, £10; ditto third yellow, £8 15s.; Ljusne mixed yellow, £9 10s. to £10; ditto third yellow, £9 to £9 5s.; Onega first yellow, £14; Petersburg first yellow, £12 to £13 10s.; ditto second yellow, £8 10s.; ditto first white, £7 15s. to £9 10s.; Soderham first yellow, £8 5s.; Stockviken mixed yellow, £9 to £9 15; ditto third yellow, £8 15s.; Srvartwick mixed yellow, £10 to £11; Utenburg first yellow, £7 10s.; ditto mixed yellow, £8 10s.; Bjorneburg mixed yellow, £6 15s.; Galstrom first yellow, £9 10s,; ditto second yellow, £9 10s.; ditto mixed white, £7 15s.; Gefle third yellow, £9 5s.; ditto fourth yellow, £8; Fredrickstadt second yellow, £7 to £7 5s.; ditto third yellow, £7; Hernosand mixed yellow, £8 to £9; ditto third yellow, £8 10s. to £8 15s.; Husum mixed yellow, £10; ditto third yellow, £7 15s. to £9; ditto fourth yellow, £8; Hudikswall third yellow, £7 10s. to £8 10s. Per 120 12ft. 3 × 9, Christiana first white, £19 15s.; ditto second white, £17 15s.; St. John's spruce, £12 to £14; Quebec first spruce, £15 to £18 10s.; ditto second spruce, £13 10s. to £13 15s.; ditto third spruce, £12 to £13 5s.; Saquenay first spruce, £13 15s.

Per load, Hernosand timber, £2 6s.; Memel, £3 3s.; Dantzig crown, £4 10s. to £4 12s.; ditto best middling, £3 10s. to £3 15s.; Pitca yellow balks, £1 9s. to £1 12s.

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Trade News.

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WAGES MOVEMENT.

Newcastle.—The carpenters and joiners have struck work. The dispute between the shipbuilders on the north bank of the Tyne and their joiners has terminated amicably. Joiners in shipyards will now be, pecuniarily, on equal terms with their brethren in the house trade. The question of weekly wages is still under negotiation.

Nottingham.—A short time since, the carpenters and joiners made an application to their employers for an advance of wages, and a social conference on the subject ensued, but without any agreement being come to. It was then decided to refer the matter in dispute to Mr. Robert Evans, architect, who has just given his decision, of which the following is a copy:—"I, Robert Evans, the referee appointed for the present year in all matters in dispute between the employers and the operatives connected with the carpenters' and joiners' branch of the building trade in Nottingham, having heard the representations of the operatives, urging an advance in the rate of wages, together with the statements and arguments for and against the same by the respective interested parties, do decide that the rate of wages remain as agreed upon by the Board of Arbitration, at a meeting held April 28, 1870.—R. Evans."

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TENDERS.

Brighton.—For the erection in carcase of one mansion, Marlborough-place. Mr. John Hill, architect. Quantities supplied:—

Kelley	£1739
Nightingale	1686
Hall	1673
Reynolds	1673
Snowdon	1600
Lockyer	1550
Newnham	1486
Barues	1325

Brighton.—For the erection in carcase of two mansions, Marlborough-place. Mr. John Hill, architect. Quantities supplied:—

Kelly	£1658
Hall	1609
Reyuolds	1575
Nightiugale	1555
Lockyer	1520
Suowdou	1500
Barnes	1255
Newnham	1187

Essex.—For sewerage at Brentwood. Russ & Minns, engineers:—

Contract No. 1.

Wainwright & Wilson	£4120	0	0
Anderson & Dunmore	3227	0	0
Ritson	3914	0	0
Walker & Yoxall	3310	0	0
Furness	3182	11	2
Hawley & Co.	3010	0	0
Wood, F. & F. J.	2934	0	0
Tanner	2912	5	0
Kyan & Co.	2700	0	0
Marshall	2500	0	0
Sibsey	2443	0	0
Hayward	2245	0	0
Bugbird	2230	0	0

Contract No. 2.

Marshall	£2070	0	0
Cochrane & Co.	2068	9	0
Begg	1954	5	0
Lawrie & Co.	1921	9	0
Dennis	1908	0	0
Sibsey	1901	3	0
Laidlaw & Son	1809	8	6
Oakes & Co.	1750	0	0
Fletcher	1745	0	0

Contract No. 3.

Furness	£719	3	9¼
Baker & Son	705	5	4
Cutler & Son	660	0	0
Kyan & Co.	655	0	0
Tanner	651	17	7
Marshall	600	0	0
Stevens	489	3	10
Hayward	480	0	0
Bugbird	478	18	0
Sibsey	430	0	9
Dennis	393	0	0

Henley-on-Thames.—For the erection of school and residence at Shiplake. Mr. Frederick Haslam, architect:—

Willis (accepted)	£560

Lewisham.—For reredos, S. Mark's Church. Mr. W. C. Banks, architect, 39a, Gracechurch-street, E.C.:—

Earp	£404	5	0
Field and Co.	395	10	0
Wittingham	385	0	0
Williamson	365	0	0
Lovelock	365	0	0
McCarthy	356	0	0

London.—For the erection of premises at Carlisle-street, for Messrs. Edwards & Roberts. Theodore K. Green, Esq., architect:—

Cock	£2690
Henshaw	2243
Wicks, Bangs, & Co.	2187
Sharpington & Cole	2173
Hill & Keddell	2150
Browne & Robinson	2136
Scrivener & White (accepted)	2105

London.—For rebuilding Nos. 277 to 279, Oxford-street. Messrs. George Lansdown & Pollard, surveyors. Quantities supplied:—

Higgs	£8070
Howard	7813
Macey	7773
Patman & Fotheringham	7612
Hill & Sons	7243
Adamson & Sons	7226
Henshaw	7093
Morter	6847

Pimlico.—For erecting five house at Victoria Station, S.W., for W. S. Salting, Esq. Mr. Knowles, jun., architect. Quantities supplied by Messrs. J. & A. E. Bull:—

Wagner	£3270	0	0
Warr	2950	0	0
Beuuett	2895	17	0
Foster	2756	0	0
Wright, Bros.	2725	0	0
Heath	2696	0	0
Stepheuson	2683	0	0
Cullum	2575	0	0
McLachlan	2572	0	0
Newmau & Manu	2556	0	0
Nightingale	2543	0	0
Capps & Ritso	2475	0	0
Gooding	2435	10	0
Suowdon	2426	0	0
Aitchison & Walker	2386	0	0
Cooke & Green	2382	0	0
Groome	1279	0	0

Plumstead.—For Sandy Hill and for hill sewer, opened by the Plumstead Board of Works at Charlton, S.E., on 5th April, 1871. Mr. F. F. Thorne, surveyor to the Board:—

Lewis	£3300
Migner	3300
Louergau	3094
Youug	3000
Bloomfield	3985
Tongue	2960
Brown	2782
Coles	2729
Wigmore	2650
Gurford	2700
Stiff	2420
Kirk (accepted)	2276
Hubbard	2000

Surveyor's estimate, £2850.

Putney.—For sewer works:—

	No. 1. Contract.		No. 2. Contract.		Total.	
Aries	£202	0	£262	0	£464	0
Wigmore	205	0	229	10	434	10
Aviss	177	0	239	0	416	0

Rochester.—For the restoration and enlargement of Cliffe Rectory-house. J. P. St. Aubyn, Esq., Lamb's-buildings, Temple, architect:—

Naylar (accepted)	£2000

Shaftesbury.—For the erection of cottage hospital as a memorial of the late Marquis of Westminster, K.G. Mr. J. B. Corby, architect, Stamford:—

Thoday	£1909	0	0
Thompson	1793	12	0
Richardson & Roberts	1760	15	0
Halliday & Cave	1713	10	0
Law & Son	1662	0	0
Miles (accepted)	1431	11	0

S. Pancras.—For alterations to the S. Pancras Committee of Works' office in Edward-street:—

Aitchison & Walker	£317
Bale	300
Crockett	290
Kipps (accepted)	278

Twickenham.—For finishing five houses, the property of H. S. Edwards, Esq. F. Allen Edwards, architect:—

Wigmore	£2620
Spicer	2587
Ebbs & Sons	2120
Spearing & Stewart	1323

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Manchester, April 19.—For the supply of 1,000 sets of oak scantling for wagons, for the Lancashire and Yorkshire Railway. William S. Lawn, Secretary, Manchoster.

Market Harborough, April 18.—For a new Wesleyan chapel and premises. William Allen, Hon. Sec. to the Building Committee.

Metropolis Local Management Acts.—Plumstead Board of Works, April 18.—For the construction of sewer and other Works, in the Wellington-road, in the parish of Eltham. James Murray Dale, Clerk to the Board, Plumstead Board of Works Office, Old Charlton, S.E.

Mirfield Parish Church, May 1.—For the warming of the new parish church. R. Lee Rayner, solicitor, Mirfield, honorary secretary to the Building Committee.

Pitcaple, May 4.—For the mason, carpenter, and slater work of completing the steading of offices at Loanends, Durno, by Pitcaple. Alex. Geddes, Logie Elphinstone.

Plumstead (Kent), April 20.—For building a detached villa and stables at Shrewsbury-lane, Shooter's-hill, Plumstead, Kent. Messrs. William Gosling and Son, 76, King-street, Woolwich, S.E., architects and surveyors.

Rodley, April 18.—For the erection of a Wesleyan Methodist Chapel, at Rodley, near Leeds. Alfred H Thompson, architect, 14, Park-square, Leeds.

Trinity House, London, E.C., April 24.—For the erection of a lighthouse, keepers' dwellings, &c., at Hartland Point, in the County of Devon. Robin Allen, secretary.

Wanstead Local Board of Health, April 29.—For the formation of a certain intended roadway, with drainage and other works. John Rogers Jenniugs, Clerk and Solicitor to the said Board.

War Department Contracts, April 22.—For the supply of material and performance of such work as may be required in planting, &c., externally and internally, the barracks at Preston. W. G. Hamley, Colonel, District Royal Engineer Office, Manchester.

St. Mary (Islington), April 20.—For the alteration and enlargement of their workhouse school, at Hornsey-road. William Hicks, Clerk, Guardians' Offices, St. John's-road, Upper Holloway.

Streatham, April 17.—For completing two houses at Streatham-common, Surrey. Messrs. Dean, Son, and Taylos, surveyors, 5, Mark-lane, E.C.

Strood (Kent), April 19.—For building an infant school. George Ruck, architect, Maidstone.

Gorseley, May 6.—For the erection of a school and teacher's house, at Gorseley, near Newent, Gloucestershire. Middleton and Goodman, architects, 1, Bedford-buildings, Cheltenham.

Guildford Waterworks, April 25.—For sinking a well in Mill Mead. Thomas Russell, Clerk to the Local Board, Guildford.

Hull, April 20.—North-Eastern Railway.—For the erection of stables, at Waverley-street. C. N. Wilkinson, Secretary, York.

Kirby Fleetham, April 22.—For restoring, refitting, and enlarging the parish church. John Booth, Esq., Kellerby Hall, Catterick, Yorkshire.

Aberdeen Waterworks Extension.—Contract No. 10, April 19.—For providing, erecting, and maintaining, for a period of twelve months, a hydraulic pumping engine, with appurtenances, in an engine house at Cults. Office of the Surveyor, Police-chambers, Aberdeen.

Basingstoke Waterworks, April 29.—For supplying and delivering of about 190 tons of several size pipes. Messrs. Russ and Minns, 9, Victoria-chambers, Westminster, S.W.

Darlaston, April 24.—For making new streets on the Butcroft building estate, in the parish of Darlaston. Loxton Brothers, architects and surveyors, Victoria-chambers, Wednesbury.

Leeds.—North Eastern Railway, April 20.—For the erection of a warehouse, at Marsh-lane. C. N. Wilkinson, Secretary, York.

Coleford (Gloucester), May 6.—For the erection of a church. Middleton and Goodman, architects, 1, Bedford-buildings, Cheltenham.

THE BUILDING NEWS.

LONDON, FRIDAY, APRIL 21, 1871.

PAINTED DECORATIONS IN NORFOLK CHURCHES.

In continuation of the description which we gave recently of some painted decorations from the churches in Norfolk, we propose now to notice the illustrations of the rood-screens at Randworth and Barton Turf, in that county, which have been published under the direction of the Norfolk and Norwich Archæological Society. The plates of both these publications were drawn and lithographed by Mr. C. J. W. Winter, and the descriptive notes accompanying them are by that zealous and able antiquarian, the Rev. John Gunn, Vicar of Barton-Turf-with-Irstead. These quarto pamphlets are welcome instalments of the work undertaken by the above-named society in accordance with a resolution passed at a general meeting, when it was determined to attempt the publication of a series of a larger size than the octavo pages of the Society's Journal, illustrating some of the antiquities of the county, the rood-screens being specially recommended for the commencement of the work. The carrying out of this proposal was systematically set about, and as a first step, a circular was addressed to the clergy requesting information about the screens in their churches, to which upwards of three hundred incumbents replied, thus enabling a complete list of the rood-screens in the county to be formed.

The next step taken was to commission Mr. C. J. W. Winter to execute drawings of the screen at Randworth, supposed to be the most beautiful example, and he has since executed others, illustrating the screens at Tritton and Barton Turf. The same artist has subsequently transferred his drawings of the screens of the churches of Randworth and Barton Turf on to stone, and these form the illustrations of the two works we are noticing. One plate in the former one has been executed in chromo-lithography, and gives a very good indication of the mode of treatment and style of colouring adopted in these paintings upon the screens of the churches of Norfolk.

Randworth church consists of a nave and chancel, without aisles, and the rood screen proper—*i.e.*, the arcade with the panels below —is placed, as usual, between the piers of the chancel arch. The rood-loft beam, with the oft itself, extends beyond the opening of the arch, and is continued along the eastern wall of the nave the whole width of the church. These wings, extending to the north and south walls respectively, formed retables to altars, and the altars are enclosed by parclose screens, the spaces so enclosed forming chapels dedicated to special saints, in these cases supposed to be the Blessed Virgin and St. John the Baptist. The remains of the altars are still to be seen behind the boarding of ews. The general view of the whole of this creen work from the nave is very fine. It is divided into an arcade of sixteen arches; ight of these in the centre are open, giving a ista through the screen into the chancel. hese arches are narrow, and tall in proportion, nd about 2ft. in width, the piers supporting hem being slender, and decorated with a uttress on the face. The arches are richly ringed with cusped work; the pier support- g the two central arches is intercepted just elow their springing by a wider arch, spaning the two central spaces to give entrance the chancel. There are then three spaces n each side, which are filled up to the height f 4ft. 6in. from the floor line, with two anels to each space. These six panels on ach side of the passage-way are filled with aintings of the Twelve Apostles, standing gures, with their names inscribed below, d each is accompanied with his usual nblem

These wings or parclose screens are a continuation of this part of the rood-screen; they extend from it at right angles about six feet into the nave, and each has three lower and two upper panels. Three only of these, being one of the former and two of the lower, contain figures. The upper one on each side is a bishop, and the lower figures S. George and S. Stephen on the north wing, and S. Lawrence and S. Michael on the south wing. The paintings on the retables are more important—firstly, on account of their higher position, being on the line of sight above the altar tables of the chapels; and secondly, they each occupy the whole width of one of the arched divisions, instead of half only, as those of the rood screens. There are thus four figures to each retable, which are seated. Those on the north side are S. Ethelreda, S. John Baptist, in duplicate, and S. Barbara. Those on the south retable are S. Mary Salome, wife of Zebedee, with her two children; S. Mary the Virgin; S. Mary, wife of Alphæus or Cleophas, with her four children; and S. Margaret.

Each figure in these panels of the retables is represented as seated in front of a background of diapered drapery, held up by an angel occupying the space within the arch. These angels are exquisitely ornamental figures, clad as it were in feathers, which cover their arms and bodies; they have, however, short mantles with rich jewelled morses. They have quaint head-dresses, some of which are like turbans surmounted by large crosses. The drapery in which the principal figures are clad is covered with the richest conceivable patterns, and the whole of their costumes constitute a complete mine of ornamental detail. The coloured plate, which forms an exquisite frontispiece to this work upon the Randworth screen, represents the figure of S. Mary Salome, with S. James Major and S. John the Evangelist as children. The former bears an escallop shell in his right hand, and with the left holds out a pear to his brother John, who, seated on his mother's knee, holds a bird (probably the eagle, his usual emblem) in his left hand. S. Mary's dress is of gold, with the richest pattern flowing over it, and her cloak is of ruby. The dresses of the children are simple and shaded with blue and murrey colour. The background is green, diapered with gold and white ornaments, and the angel above has blue and gilt wings; the space around is filled in with vermilion. The whole effect is gorgeous and rich in the extreme.

We shall return upon another occasion to the equally interesting example at Barton Turf, and trust the society may soon be able to illustrate some other of these screens, for which the county of Norfolk is so justly famed.

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EXHIBITION OF THE INSTITUTE OF PAINTERS IN WATER COLOURS.

The junior water colour society, which opened to the public on Monday last, holds an unpleasant position amongst other exhibitions. It is never the best of its kind, for we must concede to those artists known as the "Old Water Colour" precedence over the younger society, while the new exhibition at the Egyptian Hall (the Dudley Gallery) has of late years been a medium for the enthusiasm of the youngest aspirants to this branch of artistic fame, so that nothing is left to the Institute but the middle and mediocre station. This body lost a move when they constituted themselves a closed society, like the Old Water Colour Society. Had they formed themselves into a body of members, and yet admitted outsiders to exhibit with them, on the plan of the Royal Academy, they would have given great variety to their exhibitions, and attracted the rising water-colour painters, who would have eventually joined their ranks, and have given them a prestige amongst other societies. As it is, this prestige has gone over to the Dudley Gallery, whose promoters seized upon the weak point of both the already existing water-colour societies, and turned it to their own advantage. The exhibition seems to us this year not quite up to its usual standard, though a few good works preserve it from being entirely commonplace. Before we proceed to remark upon the pictures, we may perhaps be allowed to point out that it is high time that the name of the late D. Maclise, R.A., who died rather more than a twelvemonth ago, should be erased from the list of the honorary members of this society. Mr. Herbert, R.A., is the only honorary member who has contributed a work to the exhibition. The subject is "S. Mary Magdalene crossing Golgotha to the Tomb of our Lord." There is much religious fervour expressed in her face, and an excellent tone of colour in the saint's draperies. In her hands are the vases containing the spices and ointments for embalming. Behind her, in the middle distance, are the walls of the Holy City. The sky indicates the first dawn of an Eastern sunrise—little crimson clouds cross the horizon, though the stars are still shining. Mr. Edmund Warren has sought a new field for his art, and abandoned Surrey beech-woods for Irish rivers and mountains. No. 8, "By a River," is carefully wrought. The sky is full of light, and the clouds at once relieve and mingle with the distant hills, while the winding of the stream away into the distance is well felt. No. 68, "The Eagle's Nest Mountain, Killarney," is perhaps the artist's best work here: the reflections in the river are so well expressed. Mr. Warren has improved very much lately in his sky painting; he no longer gives us the hard cutting clouds he was at one time so fond of. All his skies in the present collection are true to nature; they now remind us of (what the sky really is) an arc of the firmament, whereas in his former pictures they always appeared as if perpendicular to the eye. No. 125, "Killarney," is not equal to Mr. Warren's other works; there is a want of repose about it, and the texture is woolly. "Harvest Time," by the same painter, gives one of his favourite Surrey scenes; the sun gleaming over the field of corn is truthfully painted. No. 177, "The After Glow, Upper Egypt," by Charles Vacher, is rich in tone, and the stately columns, so far away now from civilisation, are solemn in feeling and harmonise well with the deep crimson of the sky. Mr. Carl Werner sends a large work, a very minutely wrought interior of the great Khan, at Kenneth, Upper Egypt. No. 141, "Plucking a Pigeon," by Andrew C. Gow, is a work of much merit, and is delicately finished and well painted throughout. Some card-sharpers, evidently old hands at their nefarious trade, are engaged in cheating a hapless youth. One of the worthy party is pretending to give him good advice, whilst he is in reality superintending his hand. Another carelessly lolls against the mantelpiece, apparently absorbed in his cigar. The time chosen by the painter is the picturesque costume worn in the reign of Queen Anne. The faces should be studied in this picture, for though so small, they all have a marked individuality of their own. We are getting rather tired of Mr. Shalder's art. Year after year we see the same sheep in the same lanes, or browsing on the same ferny commons; these pictures are well finished, and like Nature, but this is a case of having too much of a good thing. Mr. Louis Haghe's most important work in the gallery is "The Baths at Pompeii," to which the Romans were wont to resort much in the same way that moderns do to their clubs. Another work of merit by the same artist is No. 139, "Salle d'Armes." No. 60, "The Lover's Disguise," by J. D. Linton, is a nice treatment of a very worn-out subject—an old father introducing a music-master to his daughter, who sits listlessly there, quite unaware that the stranger is her beloved one in a new garb. In "The Reproof," No. 120, by the same painter, the background is very much in the way of the figures, and runs in an ugly straight line across the picture. No. 44, "A Sand-pit, Borth," by R. K. Penson, is capital in tone. The murky colour of the sand from the recent rain, the cloudy gray sky, and the muddy rushes in the foreground are true to Nature, though she is not pourtrayed in one of her pleasantest aspects. Mr. Small sends two works, both of great ability and marked individuality, to the Exhibition. No. 82, "Frozen Out," is, as its name implies, a winter scene. A shepherd in a most picturesque smock is pouring food for his sheep into a trough; these, unable from the deep snow to get sustenance for themselves, crowd around him, eager for their meal. The rich colour of their heavy fleeces contrasts with the pure white of the snow and the black coats of the rooks who come flying down to partake with the sheep. Some old trees and hayricks occupy the middle distance, and relieve against the gray winter sky, which breaks near the horizon into a yellow and pale green line of light. The only fault we have to find with this work is that the birds are a little large. No. 156, "Potatoes," Mr. Small's other picture here, a woman and child digging for potatoes in a country garden with a pleasant cottage background, is very truthful and picturesque. Mr. Tidey sends a large figure subject, No. 199, "Flowers of the Forest," graceful maidens arranged in groups, painted with delicacy and ease. Mr. Jopling's portrait of a lady with large eyes, No. 109, is neither better nor worse than his usual productions. The fur on the dress is perhaps a shade better painted than are his draperies in the general way. No. 74, "Dust," by Valentine Bromley, is rather carelessly wrought, but the colour is good. Mr. Edward Fahey's paintings of old houses are very excellent. No. 103, "The New Place," Pullborough, is capital in colour, and the boy feeding the chickens and the white ducks are happy accessories to the scene. The colour of the group harmonises well with the gray lichen-coloured walls of the house. There is the same feeling for tone and colour in No. 142, "Part of the Cappucini Convent, Rome." This artist's third drawing here, No. 187, is not quite so happy a picture as the other, the subject being rather ugly. Mr. Collier has some clever landscapes which call for attention, particularly No. 29, "The Eskdale Fells," and No. 150, "Downs near Lulworth." No. 40, "A Tempting Offer," will sustain Mr. Bach's reputation, though it is his only work here. Amongst other pictures of merit we may mention No. 25, "A Gray Day on the Surrey Hills," by R. Beavis; No. 32, "An Old Chalk Pit, Eastbourne," by H. G. Hine; No. 175, "The Last Glass," by C. Green; and No. 223, "Gillingham, on the Medway," by James Orrock.

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DRAWING THE FIGURE, AND WHERE TO DRAW IT.

THERE are so very many things all of them coming under the general term of Fine Art that it would be not a little difficult to select one of them that should be regarded as more important than others, and as calling for special and urgent treatment. In this difficulty, however, there is certainly one thing which does specially call for and demand attention, and that of no ordinary kind, and it is what is by some called "drawing the figure," or, in other and perhaps plainer terms, the capacity in the artist of copying or outlining on a flat surface, as a sheet of paper, the human form. By some, as by Mr. Burges, this accomplishment is ranked so high, so very high, indeed, as pretty nearly to transcend all others, and to possess or confer the power of doing almost everything which the artist can be called upon to do. Indeed, he goes so far as to contend that the architectural failure of the day—and this he acknowledges—is due more than all to figure-drawing incapacity. If those who think thus are right in this, then is the way clear before us without much further discussion, and there is nothing for it but to start again *de novo*, and in a way which must necessarily, however it be done, not a little startle the powers that be wherever and whoever they be. But the real and all-important question first is, What is really meant by "drawing the figure," and what is the figure, and how does it differ from other forms, and where is it best to be got at, and what is the good of it, or in it, when found; and lastly, and perhaps more than all, who are they to whom we are to look for this figure drawing, or human figure interpretation? All these are points of no small importance and interest at the present moment, and will be found worth a little consideration and thoughtful looking into. Let us try at one or two of them. Drawing the figure, be it observed in the first place, is a phrase not a little ambiguous; it does not come from the Academy, so is not one of the stock-in-trade expressions of modern Antique art; it certainly does not come from Mediævalism, or Gothic art days; and most surely cannot be attributed to the Greek, or great figure-rendering and interpreting times. If truth must be told, it is a purely modern architect's office expression, and simply means this: the capacity in the architect himself to delineate on an ordinary architectural drawing those conventional statuesque figures which fill in niches and stand on pedestals, and always go to make up a stained glass window. Every reader will at once know what is here meant, and if he does not, then a visit to Westminster Abbey or S. Paul's will at once accurately inform him. The stained glass window figures in the north transept of Westminster, and the new marble figures in the niches of the altar screen, are, we take it, very favourable examples of this kind of work, and will show well what the problem is. We do not know whether or no it is meant that the architect should himself personally draw out to a large full-sized scale, and in sufficient detail for a carver or glass-painter to work from, such figures as these, but we will assume that it is. The architect, therefore, would so far be a painter and sculptor, half way; he would do all but actually paint the figure on the actual glass, or carve it out of a block of stone or marble. That no architect can or does do this in ordinary practice is quite certain; no one, indeed, ever knows who in reality does do this work in modern architectural practice; we never know who it is that tries, at least, to throw life into our modern churches and buildings; it is always a mere matter of business, and is the work of the contractor and his staff. It would perhaps be impossible to hit upon a subject connected with art and architecture more important than this, and it is quite certain that no art subject contains within it so difficult a problem; indeed, we may safely affirm that all the wide gulf of difference between the old-world art and method of work and our present business system is exemplified in it. In the oldest work of the figure designer, or sculptor, there has never been a doubt but that the work he did, whatever it was, whether rude or fine, was the work of his own hand and head; and, more than this, that he went to work at once and directly on the material itself, whether wood or stone, on which his skill was to be exercised; and that no intermediate drawing on paper prepared the way, as it were, for his final art skill. The result was his own, and the means direct and simple, and without external help in aid of those means. In the oldest archaic Greek sculpture, for example, there is impressed on it the absolute and certain evidence that it is the work of the man and the workman who designed or copied it, or thought it out; there is no evidence whatever that any intermediate drawing went between the final result and the indication of it on the stone surface made by the workman or sculptor himself. A drawing on paper would, indeed, seem to be almost an impossibility in such work as this, and had it been possible, must have maimed, if not destroyed it outright; or, in other words, it would have been impossible to do such work at all. In the British Museum collection there are several specimens of Early Greek work which show beyond all possibility of doubt that the artist and the workman, the draughtsman and the stone-cutter, were one and the same man. We instance more particularly Early and Archaic art, because art of this kind is a good deal alike all the world over. It is all of it real and genuine, and being, as it is termed, "untutored," and rude, there was the less opportunity for indirect or intermediate action of any kind. It is the simple, outspoken, outwritten work of the human mind in a simple and unorganised state. There is no work by the hand of man more interesting and instructive than this, and it is ever to be regretted that so much of it has perished, and that so little remains. We would here notice especially, and as confirmatory of our view of old art production, those four strange-looking figures in Venice, so often photographed and sketched, standing at their corner angles, and on their rude pedestal, a fragment of some columnar capital, and surrounded—and, it may be added, illustrated—by carved panels of rough foliage. They are in themselves enough to refute all possible arguments that can be advanced in favour of the system of "art manufacture," wherein a number of artists, however able, successively go to work in the production of a work of art. Rude, and "out of drawing," as the phrase is, as they are, the life in these strange figures is wonderful, and as impossible even to copy in spirit and in truth as are the marbles of Phidias. We would ask the reader to study these figures attentively, not in a drawing, still less in an engraving, but in a photograph, which cannot err, and he will see what the rude and untutored sculptors or stone-carvers of the distant past could do, and how faithfully they could transmit to us the look and semblance of the men of their own day. Let us add that beneath these four figures, and carved out of the plinth on which they stand, are some figures of animals and dragons fighting, and an ape wonderfully true to life. Such animals as these could not be copied from a drawing on paper; the man who thought out these strange fancies could alone draw and cut them on or out of the stone block. No reader who will look long enough and attentively enough at these rude sculptures—certainly not those who have been fortunate enough to see them—will be likely to agree for one moment with the dictum that it is the proper business of the architect, and a good thing for him, to make a drawing for the sculptor to go by, and so to convert such sculptor into a mere working tool and pair of hands. No counsel was ever more destructive of real and genuine art-work, and what is more, the better it is done, the worse it is for both the designing architect and the executive sculptor, for both are alike injured by it. The architect loses his own thought, which is thrown away with the paper it is drawn on; and the sculptor loses his faculties themselves entirely, for he is working out, as a mere machine, the thought and work of another man, and can have thus no sort of need of his own. It is, as every one will see, the direct reverse of the old and past system of art-work. It is simply "art-manufacture." Art-manufacture up to the present moment has produced absolutely nothing of real artistic might, or strength, or value, simply because it is impossible! We would ask Mr. Burges to reconsider the position he has taken by the light of this rude and antique art.

But let us look at this subject in one other light. If the architect is to be in the future so capable as this, half painter or half sculptor, what a pity it seems that all his good and able work should be doomed, according to the above theory, to destruction. These indicative drawings, be it observed, are, and must be, of value in themselves; they are the result of the artist-architect's—a much better term, by the bye, than the not-understood one, art-architect—best and highest powers. They must be the evidences of his power over the delineation of form, and must show how much of the life of humanity, to say nothing of animals, he is capable of rendering for the instruction and delight of other men; in short, they are the evidences of his artistic "handwriting," his mind and hand both being visible in them. What a pity it seems to throw them away as waste paper! Now-a-days we really see nothing of the personal artistic power of the architect, or even, it is to be feared, of the sculptor, and most surely not of the glass-painter or the wall decorator. If any want proof of it, let them look at the roof of S. Paul's and at the Abbey windows. What a marvel it would be, and what a change it would make in matters artistic and in the constitution of art and architectural societies, if all architects, sculptors, glass-painters, were to exhibit the work of their own hands, as the painters of oil pictures are, somehow or other, compelled to do. We know of nothing that Mr. Burges could do so well calculated to advance the cause of real and *bonâ fide* art as to exhibit any such of these very drawings of his, *i.e.*, the actual drawings, however rough they may be, of "the figure," which he now hands over to the stone-carver, or wood-cutter, or glass-painter; or, still better—if we may dare even to hint at it—that he, or some other architect equally accomplished, should draw on the stone wall itself of some one of their many churches or school-houses one or more figures illustrative of almost anything they fancy—their own *bonâ fide* work, from and by their own good hands, and out of their own heads as far as may be. This would indeed be to work in the old and forgotten method, now obsolete, but it would realise again to us not only the *modus operandi* of the great past, but the real work itself, and not its semblance, would be again ours! More, much more, might be said. C. B. A.

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ANNUAL REPORT OF THE COUNCIL OF THE INSTITUTE.

The following is the report of the Council of the Royal Institute of British Architects, which will be submitted to the Annual Meeting on Monday, May 1st:—

The Council have satisfaction in reporting that the Institute, as regards both its financial condition and the extent of its membership, continues to be prosperous and progressive. It will be remembered that in the early part of 1870 there was a large accession to the class of Fellows, chiefly derived from the ranks of the Associates. This could hardly be expected to occur in two consecutive years. But nine Fellows (six of whom were new members) have been elected since the last annual meeting; while the list of Associates has been recruited by an addition of seventeen. This would represent a numerical increase fully reaching the average of past years, but for the deduction of five Fellows, who have withdrawn from membership, and three who have died since last May. The class of Associates has lost two by retirement and one by death. The names of John Shaw and Philip Hardwick, R.A., deceased Fellows, will long be remembered as those of two distinguished and successful architects, who were associated with the earliest days of the Institute, and who contributed with some others to give it that position in the professional world which then so materially depended—and still depends—on the character and ability of its members. The late Mr. Oswald Arthur had only been elected a Fellow in 1868, and was little known in London. But in the West of England, where he chiefly practised, he was held in great respect. Mr. Carter was an Associate of four years' standing, who died suddenly and while still a young man. The number of Fellows is now 276, and of Associates 243, making a total of 519, or 13 in advance of last year. There are also eleven Students, of whom six were admitted gratuitously as passed candidates in the Voluntary Architectural Examination.

In regard to finance, it will be observed that the actual expenses of the Institute in 1870, (including an outstanding account for that year since paid) exceed those of the previous year by about £250. This excess is easily explained. The cost of the Voluntary Architectural Examination, held for the first time after an interval of four years, amounted to nearly £100. An increase in the respective salaries of paid officers,* proposed and sanctioned by the Council, represents £90 more. A sum of £50 was voted out of the funds of the Institute, at a general meeting, in aid of the Architectural Art Classes, while the cost of books purchased for the library (£80), and of prizes awarded (£104), exceeded together, by about £60, the disbursements made under the same heads in 1869. When, therefore, these exceptional items are deducted, it will be found that the ordinary expenditure of 1870 was somewhat less than that of 1869, and is certainly far below that of 1868. The Council have satisfaction in observing that the cost of the Annual Conversazione, the award of the £50 prize attached to the Soane Medallion, and some other expenses, which not many years ago were considered as exceptional, can now be regularly defrayed out of the funds of the Institute without inconvenience. The money donations to the Library are maintained with continued liberality, and among those of the past year, the generous contribution of 25 guineas from Mr. A. J. Humbert, Fellow, deserves especial mention. The sum of £68 was invested last year in Consols, while Sir William Tite's donation of £100 was devoted, together with some accumulated interest and other moneys, to the purchase of Madras Railway Stock for the "Travelling Fund."

In reviewing the events of the past session, the Council need scarcely dwell on the extreme gravity of the difference which arose last year between Mr. E. M. Barry, R.A., and Her Majesty's Office of Works, respecting the ownership of drawings prepared by the late Sir Charles Barry and Mr. E. M. Barry himself, for the erection and subsequent alterations of the New Palace of Westminster. Apart from the interest which the Institute as a corporate body was likely to feel in the solution of a question materially affecting the position and private rights of one of its members, the point at issue was one in which every architect felt concerned who cared to maintain a principle of professional practice, long sanctioned by custom. The special general meeting convened to consider the subject was a full one, and almost unanimous in its opinion. A series of resolutions was passed in support of Mr. Barry, and in deprecation of the unreasonable claim made upon him by the Government. Meanwhile a mass of evidence as to local custom, confirming the views then expressed, had been contributed by the principal architectural societies and practitioners throughout the kingdom. A deputation from the Institute waited on Mr. Gladstone, and explained the feelings entertained by a large majority of its members, both on the subject of Mr. Barry's dismissal from his official position as architect to the Houses of Parliament, and also on the general question as to the right of ownership to architects' drawings. Mr. Gladstone promised that the Government would give the matter due attention, and Mr. Barry has since received from the Office of Works a communication which to some extent modifies the original claim of the Government. But the broad professional question still remains to be settled, and until some decision shall have been arrived at in one of the superior courts, where evidence of custom may be produced, doubt on the legal aspect of the matter must prevail. Under these circumstances, the Council, having consulted the honorary solicitor and taken counsel's opinion, can only recommend that the ownership of architects' drawings should be secured to them by a special agreement between themselves and their clients, before any work is undertaken. The necessity of this course might be supported by many arguments, but it becomes doubly obvious while an impression exists on the part of the public that an architect, in parting with his drawings, gives up the copyright of his design.

The International Exhibition of 1871 is too important a subject to be passed over without notice. In the early part of last year the Council received from Lieut.-Col. Scott, R.E., an intimation that the Commissioners were willing to receive any suggestions on the scheme which the Institute might consider it desirable to offer. This was followed by a proposal to place on the Committee of Selection (for Class IV.) an architect, to be nominated by the Council. A similar proposal was at the same time made to the Association and other architectural societies. But the Council considered it only due to the Institute that the name of the President for the time being, which by some unaccountable omission had not been included in the original Royal Commission of 1851, should now be added *ex officio* to that body. A suggestion to this effect was accordingly made, through Mr. Beresford Hope, M.P., Past-President, in the proper quarter. But the Commissioners did not adopt that suggestion, though they offered to place Sir William Tite and Mr. Beresford Hope, as individual members, on the Commission. The Institute, therefore, acting on a a resolution passed at a general meeting on the 30th of May last, declined to be put, as a body, in *official* relation with the International Exhibition, and it was left open to individual members to contribute and co-operate as they might think desirable.

Some practical suggestions made by Professor Kerr at the close of last session induced the Council to refer the subject of the Voluntary Architectural Examination to a special committee, who after several meetings prepared a Report since issued to members of the Institute, and containing propositions for a reform by which the scheme of the examination might be simplified and rendered more available for its purpose. It was understood, however, that the proposed changes should not be carried into operation until 1872, and it is perhaps owing to this impending alteration that no candidates have this year presented themselves for examination in the Classes of Proficiency and Distinction under the old *regime*. Eleven candidates have, however, applied to be examined in the Preliminary Class, and the Examination for that section will therefore take place in May. The conduct of the examination is now entrusted to a standing committee, whose duty it will be to put into working order the general suggestions made in the report above mentioned, so that they may be carried out in future. In connection with this subject, the Council cannot overlook the frequent allusions which have been recently made both in the Institute and elsewhere to the necessity for promoting in a more practical manner the cause of professional education by the establishment of lectures, drawing classes, and an organised *curriculum* of study. It is popularly supposed that the Institute might with facility and should with willingness undertake these functions. The truth is that the causes which at present deter it from doing so have never been clearly understood. It can scarcely be supposed that the Institute could ever hope to offer advantages to the student which are not already afforded at the two principal London colleges, at the Royal Academy, and at the South Kensington Museum, to say nothing of private offices. But even if this were possible, and if the general body of members were of one mind on this subject, there would still remain the practical difficulty of ways and means. At present the annual income of the Institute is no more than sufficient for its ordinary working expenses. If it is to become an educational body, funds must be available for the purpose. Meanwhile, it may be remembered that the Institution of Civil Engineers—a far more numerous and therefore wealthier society—attempts, no further than this Institute, to provide instruction for its students, who are numbered by hundreds, while the students' class at the Institute is, by comparison, merely a nominal one.

The consultations which took place last year between the Council (assisted by the Professional Practice Committee) and a committee of the London Builders' Society, with respect to general clauses for conditions of contract, resulted in the publication of a document, which it is to be hoped may be found suggestive and useful to members and to the profession at large. In issuing it, however, the Council felt bound to guard themselves against a supposition that they were endeavouring to lay down any absolute rules on the subject. The specified clauses are only recommended on the ground of general expediency, and their adoption or rejection in individual cases is left to the discretion of members, who will be guided on this point entirely by circumstances which it would be needless to detail, and, as a general rule, by the legal advisers of their clients.

At four Examinations which have been held, under the Metropolitan Building Act of 1855, during the past official year, seventeen candidates have presented themselves. Of these, four, recommended by the Board of Examiners, have received from the Council certificates of competency to act as district surveyors, and their names have been duly communicated to the Metropolitan Board of Works. The ability and judicious care with which these examinations are periodically conducted reflect the highest credit on the gentlemen who gratuitously undertake their management.

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* In the following proportions:—£50 to the Assistant Secretary, whose previous salary had been £250; £30 to the Librarian, whose previous salary had been £70; £10 to the Clerk, whose previous salary had been £50.

The Metropolitan Buildings and Management Bill, which occupied the attention of a special committee at the Institute in 1868, has since undergone such considerable alterations that it has been deemed advisable to refer it again to a committee for consideration. The notes of this committee, after having been submitted to the Council for approval, will be in due course brought under consideration at a general meeting before being forwarded to the Metropolitan Board of Works.

The Council have observed with satisfaction that the appointment of a committee charged with the duty of selecting papers to be read at evening meetings, has been attended by general success. Without attempting a comparison, in point of excellence, of the papers read before and after this arrangement was made, it may be fairly assumed that the increased attendance of members and visitors at evening meetings, and the spirit with which discussions have of late been maintained, are due in a great measure to the interest and exertions of this Committee.

The President's opening address for the present session was remarkable for its practical and comprehensive notice of many matters connected with the welfare of the Institute and the interests of the profession. It was preceded and followed by several papers of great interest in the several departments of architecture, archæology, biography, and science, viz.:—

"A Brief Memoir of the Commendatore Poletti," Hon. and Cor. Member, by Professor Donaldson, P.P., Hon. Sec. F.C. "Cologne Cathedral," by W. Burges, Fellow. "On some Ancient Irish Churches," by Arthur Hill, B.E., Associate. "On the Admeasurement of Sky in Cases of Light," by E. Wyndham Tarn, M.A., Associate. "On the Taj Mahal at Agra," by Wm. Emerson, Associate. "On a Scroll from the Church of S. John the Baptist, Chelmorton," by Fairless Barber, F.S.A. "On some recently discovered Examples of Ecclesiastical Decoration," by J. P. Seddon, Hon. Sec. "Suggestions on the Architectural Voluntary Examination of the Institute," by Professor Kerr, Fellow. "Observations on the West Front of Wells Cathedral," by Benjamin Ferry, F.S.A., Fellow. "A Brief Notice of the late Signor Raffaelle Politi," Hon. and Cor. Member, by Professor Donaldson, P.P., Hon. Sec. F.C. "On the Mystery of the Tomb of Charlemagne," by the same. "A Communication respecting the Designs for the Completion of S. Petronio, at Bologna," by H. L. Florence, Associate. "Considerations on the Selection of Building Sites," by Professor Ansted, M.A., Hon. Member. "On S. Thomas's Hospital," by Henry Currey, Fellow. "On the Mathematical Theory of Dome Construction, by E. Beckett Denison, Q.C. "On the Roof of S. Pancras Station," by W. H. Barlow, C.E., F.R.S. "On the Alexandra Theatre, Liverpool, and the Construction of Theatres generally," by E. Salomons, Fellow; and "On the University College of Wales, and other Buildings at and near Aberystwith," by J. P. Seddon, Hon. Sec.

The proposition that an annual conference of architects should be held at the Institute was submitted to and approved by a special general meeting, held on the 20th of March last. The scheme, which it is only fair to state was suggested by a similar one originally set on foot by the Architectural Alliance, had been previously discussed by the Council and by a special committee. The same committee, with the addition of some members who have kindly consented to act as honorary secretaries in the several sections proposed for discussion, are now proceeding to organise the scheme and to make arrangements for its practical realisation. The opportunities thus afforded of considering, in open assembly, professional questions of public interest, cannot but tend to promote the cause of architectural art, and to foster that feeling of good fellowship and *esprit de corps* which are essential to the integrity of every calling, and to the maintenance of satisfactory relations with the public.

The award of the Royal Gold Medal for the current year to Mr. James Fergusson, D.C.L., F.R.S., has met with general approval by all who are acquainted with his literary works—the fruits of industrious research and accurate archæological labour. To this gentleman, and other members of the committee who have devoted time and attention to the selection of books purchased for the Institute Library, the thanks of the Council are due. Several important works have been bought,* and many others (some of which were considerately selected from the list of Libri Desiderati) have been presented by members.* The Council venture to call attention to this list, which has been prepared with great care, trusting that the deficiencies which still remain may in course of time be supplied. The donations in money have amounted to £89 during the past official year. The catalogue of drawings, prints, and photographs, compiled with commendable pains by the Librarian, S. W. Kershaw, M.A., is now in the press, and will shortly be available for reference. It is trusted that members will bear in mind how valuable and interesting the contents of the library now are, and that they will not fail to encourage younger members of the profession to avail themselves of so rich and accessible a source of information. It should be remembered that the library is open on three evenings during the week, as well as daily during office hours.

The list of prizes offered by the Institute for 1871-72 will shortly be supplemented by private generosity. Mr. H. W. Peek, M.P., after having communicated his intention through Mr. Beresford Hope, M.P., Past President, has kindly placed the sum of £72 at the disposal of the Council for distribution in money prizes, to be awarded to architectural students, under certain conditions, for the three best sets of drawings illustrative of the restoration of Eastbury Manor House, Barking, and of an ancient gateway in the neighbourhood. Full particulars of this competition will be issued in due course, and it is hoped that Mr. Peek's liberal offer will meet with an adequate response.

There remains but one subject more which calls for special mention in this report, viz.—the change in the official management of the Institute, which has recently been decided on. It will be in the recollection of members generally that, at the special meeting held on the 13th of March last, it was resolved "that there be two secretaries" of the Institute elected annually; one of whom shall be paid such salary as the Council may from time to time determine, and that the word "assistant" be omitted from section 8 in the byelaws. Acting upon this resolution, the Council have nominated F. P. Cockerell, Fellow, as Honorary Secretary for Foreign Correspondence, and C. L. Eastlake, Fellow, as paid Secretary for home duties. It will of course rest with the general body of members to confirm this nomination or otherwise, as they think fit. The Council cannot but hope and believe that the change recently sanctioned and carried out will tend to increase the usefulness and energy of the Institute. In recognising the expediency of this change, the Council cannot forget the long and valuable services rendered by those gentlemen who, during past years (and while the finances of the Institute did not justify the appointment of paid officers on the present footing), gratuitously devoted so much time and attention to the affairs of the Institute as Honorary Secretaries. The welfare of every society similar to this in origin and constitution must depend on such kindly help in its early progress. But as the field of its labours widens with its growth, official duties multiply and require more direct responsibility, as well as undivided attention. It is then that the experience of those who have relinquished their control in matters of detail may become useful in aiding them to guide the general body on broad questions of principle or policy, by their advice and influence as private members.

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DRINKING FOUNTAINS.

WITHIN the last few years a channel has been opened through which the humane and benevolent have dispensed their charitable gifts in erection of drinking fountains and cattle troughs throughout the metropolis, and scarcely any society deserves more the support and sympathy of the public than "The Metropolitan Drinking Fountain and Cattle Trough Association," formed for the purpose of alleviating the distressed condition of men and animals compelled to toil through the London streets during the hot summer months. Probably few of our readers have not witnessed the eagerness with which the fountains and troughs are surrounded, and it is to be regretted that the funds of the Association will not permit of the erection of more troughs for cattle, as these seem to be particularly desirable. The one opposite S. Pancras Church in the Euston-road, and that in the Tottenham-court-road, appear quite inadequate for the traffic along the respective portions of the metropolis, and the lengthening of each, similar to that in the Uxbridge-road, would much relieve the want. Our object, however, is not so much to call attention to the peculiar claims of the Association on the public as to consider the growing importance of drinking fountains as additions to the architectural embellishments of the metropolis; from the simple recess in a wall, they have sprung up to the monumental and costly erections to be seen in the Victoria, Regent's, and Hyde Parks, and a description of some of them may not be inappropriate. Unfortunately, a few of the smaller ones have not been maintained in the most desirable manner. The neat one in the Tottenham-court-road has had its carved foliage filled up with one or two coats of paint; that in the Marylebone-road, outside the Workhouse, has been painted black; the one in the Euston-road at the south-east entrance to the park, and that near the York and Albany, have undergone sufficient scraping to destroy the sharpness of the profiles and carving. The fountain in Hyde Park near the Marble Arch was noticed in the pages of the Building News some two or three years ago, and we will not now enlarge upon it further than by saying that, in our opinion, it is a pretentious Gothic structure, inartistic in treatment, and profuse in very questionable ornament. It is somewhat a relief to turn from this to the one erected in the Broad Sanctuary, Westminster, near the Canning statue. The style is Gothic, the plan octagonal, with grouped columns at each angle, and intermediate single columns, carrying pointed arches, traceried, and with crocketed gables; between each gable is a small shaft, carrying pedestals, on which are small figures. In the centre is a large shaft, supporting the groined canopy, and from which the water is obtained; the whole is surmounted by a crocketed spire of metal work, terminated by a cross. All the shafts are of marble, caps and bases of stone, and the pedestals to columns of red Mansfield. The detail appears to have received much attention, the mouldings generally are good, and the ornament and sculpture varied and well carved. Considerable effect is obtained (although somewhat spotty in places), by the disposal of Mosaic work in the spandrels, and between the square ornaments in the hollows of gables. The general effect of the lower portion is satisfactory, but all above this less so. Coloured decoration is here abundant and misplaced; the juxtaposition of the metal and stonework, and the starting of the spire, are badly managed; in fact, the metal work altogether appears a mistake. Had the upper portion been designed in the same spirit as the lower, the fountain must have been a success, but such an abrupt sticking on of such a spire as this to stonework has produced an unsatisfactory result.

Another large drinking fountain is placed in Guildhall-yard, City, Gothic in style and square on plan, with plain plinth, panelled above, with carved shields and nail-head ornament between each shield; a string of carved foliage runs round above the shields. On each side of the square are pointed arches, spandrelled and gabled, and supported by small columns with red granite shafts; pinnacles rise up at each angle, and a central spire terminates the fountain; small figures are placed under two of the arches, and inscriptions under the others; the water flows from a sculptured subject of Moses striking the rock, and provision for dogs is made at the base. The design of this, although evidently carefully studied, has not that thorough Gothic feeling displayed in the fountain at Westminster—notably the stiff spandrelling and the Classic-like uniformity of the shield course. The ornament is good, as are the mouldings, and altogether the work is pleasing; an addition to the height, would, however have improved it.

Passing on to those more recently erected, the two in the Regent's Park deserve special notice. That at the northern end of the Broad-walk has a stone base, octagonal on plan, with three steps up to a white marble plinth, plain, and square on plan; on each side are groups of three small red granite shafts, carrying red granite basins, and on each angle stand clustered columns of red granite, with white marble bases and carved caps of varied foliage; within these columns are pointed arches, spandrelled, and carried on gray granite pilasters, moulded at angles, the space between having circle in centre (from which the water flows), and panels round. The tympana are filled in with sculptured subjects on three sides, and brass inscription on the fourth; the faces of arches are dotted with semi-circular buttons; above the abaci of caps rise up pinnacles, chamfered and gabletted and finialled; between the pinnacles are crocketed gables, with finials at top, and with dog-tooth ornament in hollow; the tympana of three of the gables are sculptured, and in the fourth is placed a clock. The whole is terminated by a spire, square on plan, gabletted about the centre, and with bouquet at top; the faces are V grooved horizontally, and stopped; a string running round above the caps of columns is effectively relieved by five pointed stars, inlaid with dark coloured marbles. The whole of the material is of white marble; the foliage is exceedingly pretty, especially the bouquet to spire and the crockets; the mouldings are good, and altogether it is a work reflecting great credit on both architect and sculptor.

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* Among these may be mentioned:—"Les Promenades de Paris," by M. A. Alphand, with steel, wood, and chromolithographic illustrations; Chapuy's "Moyen Age Pittoresque;" Mandelgren's "Monuments Scandinaves du Moyen Age;" &c., &c.

* A large and illustrated work relating to "The Seven Pagodas on the Coromandel Coast," edited by Captain M. W. Carr, has recently been received from Sir W. Tite, M.P., ex-President. Mr. E. I'Anson, Vice-President, and Mr. T. Wells, Associate, have contributed many volumes of great interest.

The fountain placed opposite the entrance to the Zoological Gardens in the outer circle of the park has but just been completed, and there is a novelty about it particularly striking. The plan is a quatrefoil, with huge red granite basins at each foil, carried on dwarf columns of red granite with white marble caps; in the centre is a canopy of white marble, containing figures, and terminated by a cluster of metal lamps, gilded. The water is obtained at the angles of the quatrefoil, and unusually near the ground; in each basin are playing jets, and good provision for dogs at the base. Compared with the one in the Broad-walk, this fountain is coarse, and there is an entire absence of that quiet repose and harmony distinguishing the other. This does not result alone from the placing of iron lamps directly on white marble; there exists no relationship between the red granite base and the white marble canopy. The proportion, also, between the lower and upper portions is decidedly bad; the basins are much too large for the canopy, and the canopy too small for the metal work, which appears to crush it;. the figures as seen in profile are of queer expression, the jointing of the marble work roughly executed, and the general effect of the whole may be summed up in the word coarse. W. W.

ARCHITECTURAL ART CLASSES.

We have been requested again to call the attention of our readers to the work of these classes, which have now for some time been carried on at the Architectural Museum, Westminster. The Figure Class seeks to enlist the support of the more advanced students, who, after giving proof of fair proficiency in drawing from the antique, proceed to study from the living model. Draped and costume models have lately been introduced, owing to the exertions of the members of the class themselves. The subjects are selected and set with due regard to archæological correctness, and the course of study is specially adapted for architects. The Committee anxiously look forward to a more general support from the members of the architectural profession. The subscriptions are paid monthly, and all particulars can be had of the secretary, Mr. Lacy W. Ridge, 23, Bedford-row, or at the Museum, on Tuesday, Thursday, and Saturday evenings, when the class meets.

The Ornament Class furnishes opportunities for study every day and during three evenings each week. It is intended for pupils and those comparatively little advanced in drawing, and experience has shown that many of the students require instruction of the most elementary character. The fee is but 2s. 6d. a month, and yet it is not found that many avail themselves of the opportunity thus offered, which is the more remarkable, as the inspection of any collection of drawings made by architectural pupils shows that, with but few exceptions, they have not attained the power of expressing architectural ornament to the extent that even a working drawing may be fairly considered to demand. Arrangements are proposed for those who can attend in the evening only, and such are requested to communicate with the Honorary Secretary.

A Water Colour Class is being arranged under the instruction of Mr. Naftel, of the Old Water Colour Society. The class will have seven lessons at Conduit-street, and five out-door lessons on Saturday afternoons. Applications should be sent at once to Mr. Florence, 10, Craig's-court, S.W., who acts as secretary to this class.

The Committee of the Architectural Art Classes still find it necessary to appeal to those members of the profession who have not already subscribed to place their names on the list of donors to their funds. They have been put to considerable expense in fitting-up and completing the museum for the accommodation of the students, while the classes themselves have, as was, indeed, almost inevitable at the commencement, been far from self supporting. Additional donations will be very acceptable, and will be acknowledged through the Hon. Sec.

COMPETITION.

Birmingham Law Courts, &c.—We learn that a protest has been made by a competitor against the referee's decision, on the ground that the designs *ignore* the printed instructions.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. Zerffi delivered the twenty-sixth lecture of this course on Tuesday afternoon last, in the Lecture-theatre at the South Kensington Museum. He commenced by observing that he had shown in his former course that a gradual but total change had been brought about in the ancient world by the two most memorable events in history—the birth, life, teachings, and death of Christ; and the migration of the Teuton nations from the North to the South. The Classical world sank into oblivion for a time. The spiritual individualisation of outward forms was the ideal of Classic art. All the forces of nature, all abstract conceptions, were moulded into visible and tangible forms. These forms, however, were not necessarily what they appeared, but were the products of the imaginations of the artists themselves. Thus the infinite gods were the creatures of finite beings, and consequently, in spite of the inexpressible beauty of their forms, were doomed to dissolution. The divinities of old, in their charming or terrifying conceptions, were never masters of fate. They bore the character of divine immutability only when pourtrayed in wood, stone, marble, clay, or bronze, and legends attributed to them human lives, full of passion and of contests with reality. In stone only was Jupiter a divine conception; in the abstract he was an unruly being, devoid of all higher spiritual beauty. He (the lecturer) did not agree with Schiller that "because the gods had been more human, men had been more god-like," but thought that humanising the divinities, and making them so much like finite mortal beings, had caused the Classic gods to perish. Not having been embodiments of an infinite, self-conscious, supreme spirit, but merely finite forms of finite beings, they had, like everything finite, passed away. Widely different was the new order of things. The infinite was understood, for it had become flesh; it had lived and suffered, and had passed away to shine in everlasting brightness. The anthropomorphism of the Greeks was bare of reality; it existed neither in the spirit nor in the flesh, but only in clay or stone. In the new era, man created in the image of God found his god in the image of man. Whoever comprehended the Son comprehended the Father; he who loved the Son loved the Father. Father and Son were made one in spirit through the Spirit. God pervaded humanity, and humanity became conscious of what God had been, was, and could be. Thus the God of Christianity became in conception as well as in form the real and the true God, whilst the gods of the ancient world sank into mere creations of the imagination. In the new Pantheon of the Christian world, the different gods of all nations and of all times were dethroned. The fire of intellectual consciousness destroyed them, and instead of a plastic polytheism, art had only one God, one Spirit. We admired Greek art, and upheld it as an imperishable model of taste, grace, and idealisation of human forms, but all these forms were the personifications of the different attributes of the one and indivisible divinity. Creative power in Jupiter, wisdom in Apollo, fire in Vulcan, water in Neptune, love in Venus, intellect in Minerva, and strength in Hercules —all these separate attributes were united in one spiritual conception, with a self-conscious knowledge of its own divine nature. It was characteristic that all the Classical sculptures were without that expression of the inner soul and mirror of the intellect, the pupil of the eye. The soul had to be supplied by the imagination of the spectator. God in modern art appeared with an omniscient spirit, and in the flesh with eyes beaming with divine consciousness. His nature was revealed through his spirit in his life, death, and resurrection; in his teaching, loving, and suffering; in the harrowing incidents of the life of his mother; and in the acts of his disciples. It was revealed also in those in whom the divine spirit was active—for His spirit might manifest itself in every individual, whether rich or poor, mighty or weak, beautiful or mis-shapen—and in these particular manifestations it lost nothing of its universal unity. In the past all Nature had been alive with gods. Every bush, wave, brook, valley, and mountain, each breath of air, was produced by, or was the dwelling-place of a divinity. In the new era the phenomena of nature lost their importance as subjects for plastic art, and all the allegories, myths, and symbols became meaningless and senseless, if not sinful. Symbols, allegories, myths, and emblems had been growing for centuries and centuries under the powerful influence of nature. The symbolic tree, with its roots and branches, its flowers in art, its fruits in philosophy and ethics, could not be torn up over-night even by the power of a total spiritual change which had filled the world. The great fact that art had always been the most trustworthy and truthful expression of the degree of civilisation in a nation, and the most faithful formal exponent of the religious conceptions and social condition of the different strata of mankind, was apparent at the epoch of this most important artistic revolution. Art had, up to this time, been the revealing teacher of the gods, truth in the ancient world having been the outgrowth of symbolic art. This process reached its climax in the idealised sculptures of the Greek gods. Truth was suddenly revealed as having been the same from eternity. Truth, then, existed without a visible sign; it was absolute as the Divinity, the supreme source of it. It was no longer the fetish, the colossal figure of Amn, or the terrifying S'iva, but, in the words of Justin the Martyr, "God in Christ, and Christ in God," became "the very Logos"—the universal reason—"of which all mankind were partakers, and therefore those who lived according to the Logos were Christians, although they might pass with you for Atheists; such among the Greeks were Sokrates and Herakleitos." According to S. Augustine, the Christian religion "had existed among the ancients, and had not been absent from the beginning of the human race until Christ came in the flesh, from which time the true religion began to be called Christian." This was verified in art, even in the different patterns of ornamentation. During the past periods we had observed in all the different nations a longing to exalt the mind, a desire to bring the incomprehensible and the infinite into some form. It was a painful striving to give body to the bodiless. Intellect attempted to pierce the night of mystery, and to reach the day of reality. Symbolism afforded the only means of doing this. Geometrical lines were first used, and these soon gave way to plants and animals; these again were succeeded by monstrous idols, which in their turn were replaced by the beautiful ideals of Greek art. The same was to be observed in the temples themselves, and in the ornamentation of their walls. There was and always would be a peculiar charm in symbols, allegories, and myths. The endeavour to explain some mysterious sign was a pleasure. The more unintelligible such a sign was the more welcome it would be. Anything veiled in darkness and shrouded in mysticism had power over our minds. The symbol spoke to us with exciting brevity, and overawed us by its winding lines and strange forms. By its aid so much of the incomprehensible was given us in a small compass. The triangle, two united triangles, the cross, the square divided into four squares, the square in the circle, or the circle, square, and triangle combined, had been invested with a wonderfully-large amount of mystery. The next step was the impersonation of the incomprehensible in gorgeous monstrous forms, adorned with an endless variety of emblems, which became the outward and visible signs of some inward and secret meaning. The lecturer, having described in detail some of the various forms of symbolism, went on to say that Christian art had emancipated the spirit as such, and the body with its accidental formation was no longer of supreme importance. The spirit, the intellect that lived in the body, was all in all. We should step, with Christian art, into two worlds: (1), a spiritual world, in which the intellect moved in a circle, took its origin in the infinite, lost its transitory bodily form, and returned to the source from which it emanated; (2), a world of external forms, which had only a meaning as fragile vessels of the eternal intellect. In the Classical world the spirit ruled the formal phenomena; in the early period of Christianity the spirit sank into itself, neglecting the outer world altogether, separating it from the spirit, but endowing the visible productions of Nature with some outward meaning, some allusion to another world. Early Christian art, again, might be considered under the following divisions:—(1.) From a religious point of view, starting with the life, death, and resurrection of Christ, who was the focus of all things. The eternal Spirit was embodied, left its infinite form, and again freed from its fetters, regained its absolute divinity. (2.) From a worldly point of view. The spirit, freed and redeemed in Christ, sought a totally new sphere of action in harmony, love, duty, fidelity, self-abnegation, and bravery. (3.) From an individually characteristic point of view. The artist, with a freed soul, might now undertake to reproduce whatever he liked. He was no longer bound by canons, though the fact that the canons of the old world retained their hold on the Christian mind to some extent afforded a proof that art could not be separated from its gradual historical development.

The consideration of the extent to which the symbols of the ancient world were used in early Christian art will form the subject of the next lecture.

The Lambeth Vestry has decided to borrow £20,000 for paving purposes.

RENAISSANCE IN FRANCE.

EVERYTHING French is sure to interest us at this moment. The practical French science of war sank into insignificance before the better theoretical training of the Germans. French literature has for the last twenty years not ruled the refined society of Europe. French art, however, has still a hold on the minds of all those who are capable of appreciating originality, united with a keen power of imagination, well balanced by a refined feeling for beautiful forms. French art is still studied in Germany, and deserves to be studied in England. Whatever our Anglo-Saxon predilections may be, we must confess that, though the Gauls are not yet capable of managing their State affairs, they certainly manage matters of art with great skill and taste. The cause is obvious. In political matters the French are altogether ignorant of the first principles of freedom; whilst in art they study the products of all nations with intense diligence, and adapt whatever they find to be really beautiful. Pre-eminently an imitative race, like the Romans of old, they use and transform everything with great liveliness, and thus often produce admirable works of art. Dr. W. Lübke's "History of the Renaissance in France,"* which serves as a text for this article, points out the defects as well as the good qualities of modern French architecture. Whilst we are still in a state of transition, not yet capable of breaking either with the Classic or Gothic past, often mixing up the two antagonistic elements into an incongruous architectural "hodge-podge," the French have long been capable of establishing an architecture of their own—graceful as well as imposing, effective as well as beautiful. In literature and politics, as well as in art, the French have always received their first impulses from abroad. Greeks and Teutons have worked out these problems from their "inner consciousness," as a Hegelian student would say; the French have taken their fundamental forms from other nations, from outer influences, made themselves masters of these forms, and produced something new. When they rebel, they must have a red Phrygian cap as an emblem; when they write a classical drama they take Orestes, Phedra, or Lucretia, Brutus, or Cæsar, as the leading characters—transform these ancient worthies into modern ladies with plenty of "rouge" on their cheeks, dressed in hoops and tucked-up skirts, or into gentlemen with silk stockings, knee-breeches, and splendid gold snuff-boxes. The Roman or Greek prototypes have vanished. We see a genuine French Orestes or Brutus before us, with modern love phrases or heroic speeches on his lips. This is exactly what they have done in architecture. Renaissance in Italy originated in the creative genius of the nation. The Reformation which, in the sixteenth century, took a decidedly theological and metaphysical direction in the North of Europe, exercised in Italy a powerful influence on the regeneration of art. Whilst Reuchlin urged the people to study the gloomy grammar of the Hebrews, and Erasmus of Rotterdam revived the study of Greek philology, Perugino, Michael Angelo, and Raphael excited the Italians to study the prophets in imposing forms, and the Greeks in their accomplished works of art. In the North of Europe the movement was spiritual; in Italy it was a revival of beautiful forms. We are, however, spirit and body, and only a union of the two elements into one harmonious total will lead us to attain the climax of our artistic development. The French have tried to put this theory into practice. French Renaissance did not take its origin in an irresistible impulse of the national spirit, but in the wills of kings and nobles. Only by degrees do we find the artistic genius of the French mastering the despotically imposed foreign lines and forms, and working out a national style, simple in its conception and elegant in its expression. We must at the same time remark that in France everything took a decidedly secular direction. Whilst in Italy the churches were principally, but not exclusively, affected by the newly-revived style, in France the Renaissance buildings were mostly those of kings. From the castles of Bury and Blois, down to the Louvre and the Luxembourg, Renaissance churches and chapels were of secondary importance. The Renaissance life of France was altogether different from that of either Italy or Germany. In Italy the old prejudices of asceticism gave way; a new spirit of beauty and piety in colours dawned over the peninsula in the bright sun of a Southern sky. The merry colours revolted against the darkening clouds of pietistic self-abnegation; the old heathen Venus sprang again from the silvery brine of the Adriatic, and regained her sway in the sacred, spiritualised, and very beautiful form of the Madonna and her child. Hercules appeared as Moses, Jeremiah, or Ezekiel, and the majestic features of Jupiter were borrowed to give power and dignity to the Creator of all things, visible and invisible. In Germany, under a cloudy sky, with at least five months' snow, covering meadows and fields, trees, and high-gabled house tops, colours had less charms, but the minds of the learned soared above this world into the regions of spiritual criticism, of theological controversy, metaphysical disputations, and a correct appreciation of the hidden powers of Nature. In France, life was a mixture of the two elements, with a sprinkling of chivalrous love for reality, pomp, and vanity. French life was bold, enterprising, eager for change and adventure. We can scarcely behold the elegant gold and silver, ivory and bronze vessels and ornamentations, the stone palaces, with their decorated fronts, the plans of the castles, with their many staircases, without being reminded of the careless life that must have produced this style in art. Above all the mysteriously winding staircases leading to some hidden closet, with an enchanting view on a lovely garden, greatly excited our antiquarian curiosity, for there was always much love to be found in "la belle France," more than is good for a well-regulated household. Whilst the Renaissance in Italy was sublimely religious, and the Renaissance in Germany profoundly philosophico-theological, the Renaissance in France was extremely practical and architectural. In Italy we may study the revival of modern art systematically, and trace its slow and gradual progress from the angular and heavy forms of the middle ages to those of modern elegance and perfection. In France this task is scarcely possible; we can only divide our subject into historical periods, and state what the ruling powers wished to have executed, "selon leur bon plaisir." From the time of Charles VIII., who rushed off to Italy and prepared a campaign of merry-making, down to Louis XIII., when the French Renaissance style was settled, kings and nobles began to build castles in Italian forms. Italy was in those times the powerful motor in poetry, science, art, and philosophy. It was in Italy that Charles VIII. for the first time saw triumphal arches and stenographic works in all their splendour; palaces with arcades, gardens with ponds and fountains, parterres of roses and lilies. It was in Italy that the French had an opportunity to compare their dull, cornery, heavy, quaint, and dark, half-Norman, half-Gothic architecture, with the splendidly-towering, lofty and airy products of Italian early Renaissance. What wonder that their hearts throbbed with joy, and that they longed to introduce works like those of Brunellesco, Ghiberti, and Masaccio! Do we not even now admire their genial conception? Italy taught the French architecture. The French appear to have forgotten this circumstance; they think Renaissance is a French word, and that therefore France must have been the creator of this new style. The French have, as usual, "annexed" foreign motives and forms, and altogether ignored those to whom they owed them. This is the more to be regretted, for had the French not lost the historical basis, they might have studied a little more Classical simplicity, in the ingenious variety of the Italian Renaissance, and continued to improve upon it. In Italy, as well as in France, the regeneration of art was the consequence of an assiduous study of the antique. Without the Greeks, no Renaissance. Louis XI. already felt this, and tried to improve the University of Paris, which had been for centuries the hotbed of metaphysical mushrooms by introducing the study of Greek classics. This study worked wonders. The interest excited for heathen divinities, nymphs, and sirens was immense; proper care was to be taken of the body, and cricketing and round games were cultivated to improve the agility of the limbs; both games were introduced from Italy; but only very few selected spirits took an interest in beautiful forms. Furniture and ornamentation were still very stiff, very Gothic, very sombre, and in perfect contradiction to the spirit of the Gauls. The style with nooks and corners, pinnacles and little useless spires, and still more useless towers, of oriels without sense, and buttresses without purpose—of all those geometrically-confused arches, trefoils, triangles, and circles, this whole mystic incomprehensibility, expressed in piles of stone, was in perfect accordance with the theological subtleties and windings, the points and counterpoints of the German mind. But to the French, who never dived deeply into any mysteries except those of love and equality, this style soon became perfectly unintelligible. The Italians taught them better art; the English made them acquainted with politics, and the Germans with science. Comines spiced his diplomatic dispatches with artistic remarks on the beauty of the marble palaces in Venice, the splendid decorations of the halls and rooms, the stately furniture, and the soft carpets. He admired the splendour of the Certosa at Pavia, the most beautiful church he ever saw. He and his successor, Cardinal George of Amboise, became the most fervent advocates of the new artistic tendency in France, which they had learned to admire in Italy. As soon, however, as the spirit of Greek and Roman antiquity was aroused in France, the French used it with intense fervour. But the new tendency was mixed with many a superstition dear to the middle ages. The architects felt a new electric fluid streaming through the world, and applied it in the beginning to light up their old Gothic forms. In the time of Francis I., (1515-1547) the change in life and architecture was more decided. He himself was beautifully made, brave as Achilles, and loved wit and art, wine and science. He was the first to admit ladies at court. "A court without ladies," he declared, "is a year without spring, a spring without roses." Castles and palaces were built, and provided with reception halls and cosy closets, libraries and sumptuous bedrooms, front and back staircases, front and back gardens, bowers, and statues; but an Italian was in reality the soul of all these new changes and forms. Benvenuto Cellini had to invent, to suggest, to create for France; he had to make golden salt-cellars, silver vases, a colossal fountain for Fontainebleau, and twelve silver statues of gods and goddesses, which served as candlesticks at the royal table. Francis I. and the genial Cellini were friends; the philosophical artist, endowed with boundless imagination and a keen sense of beauty, found in the king a master capable of appreciating his eminent qualities, and thus art flourished with magic power in France. Leonardo da Vinci, that highly accomplished master, versed in all the sciences of his times; Andrea del Sarto, Rosso, and Primaticcio took their abode in France, and turned Fontainebleau into a perfect museum. One hundred and twenty-five marble statues and casts of the column of Trajan, of Laocoon, Venus, Ariadne, &c., adorned the palace of Francis I. Raphael painted a S. Michael for him, and Titian painted his portrait. The French king turned abbeys into studios for Italian artists, and his spirit created a fervid love for beauty throughout the whole of his kingdom. The architects at that period were Frenchmen, and kept to the old regulations and plans—though they had to break with the past and to adapt themselves to the exigencies of modern Italian art. They did this by degrees—first in secular buildings, and, in the second half of the sixteenth century, even in churches. The palaces preserved an outer and an inner court (*basse cour* and *cour d'honneur*). The plan of a castle may be best studied in that of Bury. We have a draw-bridge, flanked by two towers; a principal court-yard, surrounded by dwellings; a long gallery, the show apartment of those times; double staircases leading into the ornamental garden, which was surrounded by a wall, at the further end of which stood a small chapel; a fruit garden, the wall of which was provided with a tower for pigeons, and large domestic buildings. But these forms were endowed altogether with a new spirit. The towers which in olden times served as a means of defence were, as such, useless; they received large windows to overlook the beauty of the country. During the middle ages men turned their minds, houses, and castles too much inwardly. This is the reason that our very best Gothic churches are in places where nothing can be seen of them. Later castles and churches turned their fronts outwards; they began to look hospitable and solemnly inviting. The unwieldy big gates, with a crippled, dwarfish door at their sides, were changed into high portals with an elegant cornice; the windows on the roof still preserved some Gothic forms with pinnacles, but they were more in the shape of pillars and columns; the windows were provided, but only for a time, with stone cross-beams, and the frames ornamented with fine Gothic mouldings. The general arrangement of the ground-plan was still confused and contrary to the laws of symmetry, but by degrees a greater regularity was observed in the proportions of the different parts of the building. Most of the castles built under Francis I., as Chambord, Madrid, La Muette, and Andre, consisted of more or less numerous independent lodges, each of which was provided with a sitting-room, bed-room, dressing-room, retiring-room, and a separate entrance and staircase. Every floor had a "salon," a kind of drawing-room, or even several such rooms, occupying as far as possible a central position. As we mentioned before, the most important apartment in these palaces was the gallery—a hall of oblong dimensions—very much like the Assyrian halls of state, of which the banqueting-rooms of the old castles form the transition links. These galleries, with their ceilings in gold and colours, their pictures and rich stucco ornamentation, had an effect totally different from that of the old halls with their cross-vaults supported by pillars, and their high-arched windows with painted glass panes. The high turret-like roofs, with windows, and their ugly companions, the thin chimneys, were kept as a dear relic of Gothic quaintness, and served to destroy the effect of the imposing lines of the French Renaissance. The light decorations of the walls, the mouldings round the doors and windows, the division of walls by pilasters or half-columns, and the cornices, took decidedly Greek forms. In Italy everything was well balanced: no protruding, dish-cover like house-tops were allowed; the lines with the Italians were straight, interrupted only by statues or vases on pedestals, delineating their elegant forms on the dark blue sky as back ground. The French also adopted the early decoration of the Italians—the Corinthian capitals, with only one row of acanthus leaves, out of which grew dolphins, dragons, and various winding figures. Elegance in this kind of composition, variety of motive, grace of invention, and a peculiar delicacy in the execution, distinguished the French artists above those of all other nations, as soon as they made themselves more acquainted with the antique. The interior decoration of these buildings opened even a greater field for the ornamentist. Ceilings with rich panellings and rosettes, belts charged with foliage and guilloches, beautifully carved in marble and profusely gilt, produced wonderful effects, heightened by the well chosen heavy tapestry in silk, damask, taffeta, or velvet, in plain colours with flower patterns, or in Gobelins, with rich pictorial representations. Chairs, beds, baldachins, tables, consoles, curtains, looking-glasses, and frames of pictures, were all brought into strict harmony with the new style. All mimicry was avoided; the ornamentation was rich, but not overdone; the patterns were graceful; nymphs, sirens, dolphins, arabesques, telamons and caryatides, tritons and imaginary animals, did not look like a collection of ill-arranged, badly-united, grotesquely composed monsters. The upper ornaments were not made heavier than the lower, nor the laws of gravitation disregarded; the acanthus did not look like badly-cooked and worse dished-up cabbage-leaves, nor the vines like curl-papers, nor the grapes like small cannon-balls. The paintings filling up the walls and panels, replacing the old-fashioned wood-carvings, were tasteful—many of the refined Italian patterns having been introduced. At last, towards the middle of the seventeenth century, all became confusion, all fell into those mistakes which some of our modern artists appear most eager to imitate. Our study ought to be directed to the products of Lescot, Bullaux, de L'Orme, de Brosse, &c., who teach us how to use borrowed forms, and to endow them with charming originality. Dr. Lübke's work serves this purpose. He traces step by step the growth of French Renaissance from the times of Charles VIII. to those of Louis XIII., when with Louis XIV., the real Cinque-Cento became a matter of the past, and the sickly spirit of the age produced sickly forms in art. The publication of historical books like the monograph in question, and also Dr. Lübke's "History of Art," which has reached a fifth edition, notwithstanding the sanguinary struggle which the Germans had to go through, shows what vitality exists in Germany in matters of art. It is an acknowledged fact that a correct appreciation of history and a thorough knowledge of theory serve even a genius. The difference between a genius and an every-day artist is that the genius has the theory inborn; he knows it intuitively, he has it in his eyes, in the tips of his fingers, he follows out the abstract rules of art unconsciously. But not all artists are born geniuses; what the one possesses as a gift from above the other has to acquire by hard study, and the study cannot be limited to a mere practical reproduction of certain forms; he has to make himself acquainted with the historical progress of the different styles, as the only means of reproducing what is good, of avoiding what is bad, of improving what is capable of further development. This we learn only through history. We often see our architects clinging to certain forms with a polyp's tenacity, or we see them changing those forms; but, unacquainted with their origin, they distort them, mix them up with others, and produce some of those eyesores which disgrace the thoroughfares of London. Our modern times are not made for Renaissance, but Renaissance is certainly made for our times. The long straight lines which form its basis, interrupted with arches, afford us plenty of space for showing our talents; whilst the obsolete Gothic is more convenient for those who like quaintness to hide their ignorance in taste, their want of knowledge in decorative motives, their total incapacity of producing a modern building. We would especially advise our young striving artists to study Renaissance, that of Italy first, and that of France next. The Germans have in later times, through an indefatigable study of Greek monuments of art, and the best Cinque-Cento, produced, under Schinkel, an entirely new architectural school, which has succeeded in bringing the old Greek Classic style through a happy combination of the best Renaissance ornaments into perfect harmony with the wants and tastes of our age. The modern spirit of inquiring philosophy wants light, fresh air, and as few nooks and corners and hiding places as possible.

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* Geschichte der Renaissance Frankreichs. Von WILHELM LUBKE, Professor der Kunstgeschichte am Polytechnikum und der Kunstshule in Stuttgart. (Stuttgart: Ebner and Seubert. London: A. Siegle, 110, Leadenhall-street.)

X.

OLD CHURCHES OF SOUTH LANCASHIRE.

(*Continued from page* 243.)

BESIDES the plain, but more usual type of Lancashire Mediæval church architecture, spoken of in a previous article (March 31st), there are richer, older, larger churches found in some of the densely populated towns. The most important of these are the Cathedral Church in Manchester and the parish churches of Wigan and Lancaster—the latter, though in North Lancashire, having every characteristic of a South Lancashire church. These buildings are few and far between; they were built in the fifteenth century, and belong to the richest and latest type of the Perpendicular style. The ground plans are very varied, are much larger, and differ considerably, not only from their plainer neighbours of the following century, but also from one another; the general character, however, of nave and side aisles, choir and side aisles or chapels, and a tower without spire, remains the same. The towers are placed at the west end, as a rule, but that of Wigan Church stands in the middle of the north side; they are both lofty and imposing, with rich but slender buttresses placed at the angles, two buttresses on the front of each face. A spiral staircase is often placed in one of the outer angles, but concealed as much as possible by the adjoining buttresses. The towers are generally divided by string-courses into four stages, and rise two stories above the roof of the nave, the buttresses being similarly subdivided by the same string-courses and by plain or gabled set-offs. The upper story and the upper part of the tower is always of very rich design; the former usually contains one large transomed window on each side, with rich tracery in the arched head, and panelling from the springing of the arch to the string under the battlement; this is found in Manchester Cathedral. In Wigan Church there are two three-light transomed windows on each face with a string course above, and over that a line of panelling, broken in the centre by a clock dial, and a string-course above the panelling. The upper story of Lancaster Church tower is entirely plain, but has a large four-light debased window on each side, with ornamental carving in the heads of the arches. The towers are crowned by well-moulded battlements, which are sometimes plain and sometimes open, but they never have a very imposing appearance. The pinnacles are small, but elaborate; they crown the buttresses, and two or three are often grouped at the angles, one or two pinnacles of smaller size being often placed at equal distances apart on each face of the tower. The clock dials are important features, their position being very often coeval with the building; this is the case in Manchester and Wigan. In the former they occupy the third story, or that just above the nave, and form the centre on three sides of a beautiful pannelled story; the dial is omitted on the east side of this tower. The lower stories of the tower are very plain, sometimes having a door in the west face and large window above, but very often without these features; and only an insignificant staircase doorway is provided, and small windows placed sometimes only on one side, and sometimes on all the sides of the upper story. Sometimes the tower opens by a large arch into the nave, but often has not the slightest internal connection—in the latter case being simply a belfry throughout. The nave is long, wide, and low, with broad side aisles, which are not so high as the nave, but often of nearly the same width. In Manchester Cathedral there are two aisles on each side of the nave, both of these being under the same lean-to roof, but separated internally by an arcade. The clerestory wall generally has flat buttresses crowned with pinnacles; these divide the wall into a number of bays, each bay containing a large and wide window. In Manchester Cathedral there are wide six-light windows in each bay, with tracery in the arched heads, and richly carved spandrels. In Wigan Church there are two two-light arch-headed windows, and Lancaster has one arch-headed window. The windows are very numerous in all cases, and placed near to each other—a well-known feature in the Perpendicular style. Above the windows is a richly-moulded string and battlement, the latter being sometimes open, and very rich. It is in general appearance like that of the tower, and broken at equal distances by the pinnacles, which form a highly picturesque sky-line. The roofs are flat, and entirely concealed by the battlement. The nave aisles generally have a similar battlement to that of the nave, which hides a flat lean-to roof. The side aisles are divided by buttresses into a number of bays of equal width, the buttresses being often richly panelled, and crowned by pinnacles. Each bay contains a large arched window, the arched head being little more than two straight lines, rounded at the angle of junction with the jambs; the two-centred arch is, however, found over the wider windows. The walls are left plain, and the windows are more lofty, and set at a much greater distance from each other than those of the clerestory; they are divided into many lights, sometimes sub-arcuated, and having characteristic tracery in the arched heads, with a string-course below and dripstone above. These windows are always Late in style, and those of a debased character are by no means rare. The stone seats for mullions on the window-sills are often left uncut, as at Lancaster. A bold plinth is always found round the whole church; and it may be remarked that whenever ground of higher level occurs, however slight the difference may be, the plinth is raised to suit it, this elevation being executed in the most pointed manner, being often placed in the centre, but still more frequently to the east end of a bay. This can be seen in Manchester and Wigan, and also in Lancaster, and at Furness Abbey, in North Lancashire. There is generally a south porch; but small side doorways are constantly found. These side doors are placed under the centre of one of the aisle windows, the string-course under the windows being raised in consequence, or if the doorway is very large the window is left out, as at Wigan. Their general form is a depressed arch, in a square frame, and over this a label, the jambs ornamented with shafts, and the spandrels filled with shields and foliage. The choir, or chancel, is, as a general rule, merely a continuation of the nave, from which it is sometimes separated by a large octagonal turret on either side, placed in the centre of the side walls and crowned by stone spires; these turrets are often very richly decorated. At other times the choir is a continuation of the nave without any external break. The clerestory is generally the same, or nearly so. Often the nave and choir are of equal length, and the turrets stand in the centre of the church, as in Manchester Cathedral; but sometimes the choir is much shorter, as at Wigan. There are generally side aisles or chapels north and south of the choir; the side aisles are for the most part a continuation of the nave side aisles, but very often chapels are found of the same height, sometimes outside the aisles, and sometimes as a substitute for them. The chapels are of the same general character, but often much wider, and covered with gabled roofs, which give a remarkably rich effect to the east end of the entire church. Cusping is abundantly introduced both in windows, battlements, and panelling. Transepts are never found.

Internally, the oak roof of the nave is very flat, and often very beautiful; the fronts of the main beams are richly carved, with wall-posts and struts placed at the ends of each beam, the wall-posts resting on richly carved corbels or shafts, the shafts being often provided with capitals, strings, and bases, and resting on the capitals of the nave or choir arcade. The slightly inclined slopes of the roof are divided by richly-moulded stiffening-pieces and purlins into a number of large squares, which squares are sometimes carved in an elaborate geometrical pattern, and at other times left plain, the latter being the rule. The aisles and chapels are covered by similar, but plainer roofs. Bosses are not often found. The internal walls are often plastered, with stone dressings. The pillars and arches are remarkably rich, and are generally splendid examples of the Perpendicular style of architecture. There is always a fine large arch between the nave and choir. The pillars and arches of the choir arcade sometimes differ considerably from those of the nave, both in general effect and richness in detail. This is to be seen at Lancaster. The font with its canopy is always very elaborate, and of the same date as the church. The wood-work, coeval with the church, is of great value, and of the richest detail. The choir stalls in Manchester Cathedral are certainly among the finest stalls in England. There are often rich wooden screens before the side chapels; and at Lancaster parish church there is a fine wooden altar-screen.

Beautiful though these churches may be, the beauty is like the flicker of the dying ember; a strong debasing influence is plainly marked, which influence is clearly manifested in the plainer sixteenth and seventeenth century churches of Deane, Prescot, Huyton, Farnworth, Aughton, Halsall, Prestwich, Cheadle, Radcliffe, Rivington, Eccles, and formerly in Bolton, forming a strong contrast to those progressive architectural days prior to the fourteenth century, when the architect's main idea was, not eccentricity, fashion, or the burlesque, but grandeur in conception, beauty in form, and truthfulness in execution, not only in the most imposing mass, but also in the humblest detail or ornament.

R. H. Snape.

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THE ENLARGEMENT OF BILLINGSGATE MARKET.

THE Markets Committee of the Corporation, in their report relative to Billingsgate Market, which was taken into consideration at the last meeting of the Court of Common Council, state that they had before them several plans for the enlargement and improvement of the market, which they carefully considered. Finding that any attempt to extend the market to the eastward would be opposed by her Majesty's Commissioners of Customs, and that the owners of property to the westward of Darkhouse-lane would oppose any extension of the market in that direction, they instructed the architect to prepare a plan for enlarging the market by extending the same up to and including the west side of Darkhouse-lane, which he has done. After further considering the subject, it appeared to them that the requirements of the market would be sufficiently met by thus extending the market as shown upon the plan, and making such alterations and improvements in the construction and arrangement of the whole of the market as experience had shown to be requisite for the convenience of the trade, and the due and proper carrying on and conducting of the business of the market; and after mature deliberation they arrived at the conclusion that these objects might be attained at an expense not exceeding the sum of £150,000, including the cost of acquiring the property that does not already belong to the Corporation. They therefore recommend that they should be authorised to prosecute the Bill introduced into Parliament for the purpose of obtaining the necessary powers to enable the Corporation to acquire the property required for the extension of the market to the western side of Darkhouse-lane, and to raise a sum not exceeding £150,000 for that purpose, and for the alteration and improvement of the market; and also to amend the Billingsgate Market Act, 1846, with reference to the assessment and collection of tolls, stallage, rents, and market dues, and in such other manner as may be deemed advisable for the advantage of the Corporation and the due and proper management and regulation of the market.

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THE RESTORATION OF OLD CATHEDRALS.

A MEETING of the Liverpool Architectural Society was held on Wednesday fortnight, in the Royal Institution, Colquitt-street, under the presidency of Mr. Vale.

The paper of the evening was by Mr. Samuel Huggins, "On the so-called Restoration of our Cathedrals and Abbey Churches." After dwelling at some length on the beauty and the moral and intellectual value of the edifices in question, he proceeded to the expression of his views as to the nature and effect of the operation called restoration, to which so many of our cathedrals and abbeys and ancient parish churches had been subjected throughout the land. He said it was cutting away the old familiar face that had looked out upon and been lovingly looked upon by a score of human generations; the face on which the lights and shadows of ages had been cast; that had borne the brunt of time and change, weather and atmosphere, and other natural influences, and which had given it such tints and harmonies as rendered it more beautiful than in its prime—tints and harmonies that lent new gladness to the sunbeam, and that beggared all the artificial polychromy in the world: it was cutting away all this, and substituting for it a feelingless mask of new stone hewn by workmen of to-day. It was putting the inside, the mere lining of an old church, into a new outside one; the new one being supposed to exhibit the design and character which the old one exhibited 700 or 800 years ago. So had many of our finest cathedrals been "restored," not only obliterating so many beautiful pictures, but wiping out so much historic record which existed for us in these stone relics of the past. It was of no use to tell him that this treatment of the edifices in question was for their preservation, because it made them not worth preserving. It was the destruction of everything in them for which we loved and prized them. So treated, any building lost its identity and merged its existence in another, a new and comparatively uninteresting building. If asked what he would do with these structures, he would answer "Let them alone"; and seeing they were confessedly unsuitable forms as regards their present uses, employ the money in entirely building suitable ones, exactly adapted to the present worship—a course by which we should have in each case two cathedrals, one a really useful one, and the other left in its integrity, and all its native and acquired beauty, instead of one bad one, uncomfortable as a church, and spoiled as an antiquity. As to the old buildings, he believed that, in a majority of instances, with their enormously thick walls, they had sufficient strength left in them to brave the Tooth of time and be the delight of all men of taste for ages to come, increasing in interest and beauty for every succeeding generation; and when they fell to ruins being more beautiful still—a state, however, which, if duly protected, they would be many centuries in reaching, for those buildings that had reached it did not reach it by the action of any agent at present operating on our cathedrals, but only by violence, war, or the religious fanaticism of the reformers. It was generally supposed that for the loss of all this historic interest, and of the beauty that time and weather bestow, we were compensated by getting back in each instance the original architectural beauty of the building as it came from the hands of its author: but this was a great mistake. He believed this restoration not only did not bring back the original beauty of the building, but it took away what little may have remained of it. He did not blame the architects for this evil so much as the clergy, who had otherwise injured the study and thwarted the progress of architecture by undue interference in the style and design of ecclesiastical structures.

A discussion ensued upon the subject, after which a vote of thanks was accorded to Mr. Huggins.

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Rochester Castle.—The Rochester Town Council have made a rate of one penny in the pound for the purpose of maintaining the Rochester Castle gardens as a place of public resort. The gardens will be laid out and planted by means of a public subscription, but the Corporation have the power to make a rate on the citizens for their maintenance. Plans have been approved for laying out the ground.

Disused Graveyards.—Mr. Robert Baker, one of the chief inspectors of factories, in his evidence before the Royal Sanitary Commission, which appears in their second report, just issued, expresses his opinion that all disused graveyards in cities and towns should be asphalted or flagged over, the gravestones being set among the flags or in the asphalte. In the city of York, and even in Leeds now, he says, the disused graveyards remain as they were originally before the cemeteries were put in operation, and so many bodies have been interred there that when the rain falls it must necessarily pass through the yards where the interments have taken place, and may materially affect the wells in the neighbourhood, if there are wells there. Cemeteries, Mr. Baker states, should never be upon a hill or upon the side of a hill, unless where sloping towards a river. He thinks that at every cemetery there should be a mortuary for from one to fifty bodies, with separate cells with locks and keys, the numbers of the cells and keys to correspond, and that it would be desirable in the case of non-contagious diseases that the bodies of the poor should be conveyed soon after death to these mortuaries—if need be, at the public expense—the key to be given up to the relatives from the time the body is deposited in the cell until the time of interment, which time should be fixed in order to prevent offence in the summer time. The removal of bodies to these mortuaries to be optional when the death has occurred from a non-contagious disease, but compulsory when it has occurred from a disease that is contagious. In this latter case, Mr. Baker is of opinion that it should also be compulsory to have the body placed within a shell within a coffin (if it be desirable that it should be kept for the arrival of friends), and that between the coffin and the shell there should be an interstice of pitch, the lid of the shell being also pitched on, but with a glass over the face.

GODWIN & CRISP'S DESIGNS FOR THE BRISTOL ASSIZE COURTS.

We have more than once been invited to give the designs submitted by Messrs. Godwin & Crisp for the Bristol Assize Courts, and only a few days since we received a letter from an esteemed Manchester correspondent asking us to do so. We this week comply with the request. Some of our readers will no doubt remember that this competition was a rather extraordinary one. Three prizes were offered, and a limited number of architects—thirteen, if our memory serves us correctly—were invited to submit designs. In due course the designs were sent in, and Mr. Waterhouse was requested to advise the Committee in the matter of selection. After conscientious and marked consideration, he awarded the first prize of £105 for the plan bearing the motto "1066;" the second, of £52 10s., to "Æcles Colstonian;" and the third, of £26 5s. to "Nisi prius." It was found on referring to the authors of the mottoes, that Messrs. Godwin & Crisp had swept off the three prizes; and one reason why they were so successful was, they strictly complied with the printed conditions. One of the chief features of their designs was the preservation of the historical Colston's Hall. Some of the unsuccessful competitors raised an objection that their plans had not been considered on their merits, and various reasons were urged in defence of the statement. Mr. Waterhouse was memorialised to reconsider his decision, or to advise a second competition. This he refused to do, and gave unanswerable reasons for his refusal. The Corporation, however, when it received the report of the Finance Committee, refused to be governed by it. The *Pall Mall Gazette*, in an article written at the time, said: "The whole affair is, in fact, a specimen of those corporate and committee ways which are the bane of architectural art, and which have covered the land with third and fourth-rate specimens of the incapacity of third and fourth-rate men." After a great deal of squabbling, and in opposition to a protest from the Council of the Royal Institute of Architects, and a memorial from well-known men, a second competition was decided on. In the second competition Messrs. Godwin & Crisp carried off the second prize for a design, of which we will give an engraving in an early number.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the fortnightly meeting of this Institute on Monday evening last, the President, Mr. T. H. Wyatt, in the chair, a letter was read from Mr. Cockerell informing the Council and Members of the death of one of the oldest and most distinguished of the Foreign Members of the Institute, M. Felix Duban, which took place at Bordeaux during the early days of the siege of Paris. Several donations in books to the library having been announced, the thanks of the Institute were, on the motion of Mr. Penrose, tendered to the various donors. Mr. Edward Birchall (Associate), of Leeds, was then unanimously elected a Fellow.

Presentation of Royal Gold Medal and Institute Prizes.

The Chairman then said that it was his agreeable duty to present (with the concurrence of Her Most Gracious Majesty the Queen) this year's Royal Gold Medal of the Institute to Dr. Fergusson. It would have been more gratifying to him (the President) had the duty fallen to other hands than his, for any one of his predecessors in that chair could more fully have stated the claims which Dr. Fergusson possessed to that honour. However, it gave him (Mr. Wyatt) the opportunity of stating thus publicly the great personal regard and esteem he had long felt for Mr. Fergusson. It was not, perhaps, generally known upon what principle or method this annual Royal Gold Medal was disposed of by the Institute. Though no definite rule had ever been laid down for its appropriation, the custom of late years had been—firstly, to award it to some foreign architect or antiquary of distinction; secondly, to an English architect of eminence who had succeeded in executing a building or buildings of great merit; and thirdly, to one (architect or not) who had made any notable contribution to the history or literature of the profession. Happily for himself, Mr. Fergusson had not adopted the profession of an architect; the medal was awarded to him for his patience, zeal, and industry as an antiquary, and for his high power as an architectural historian and author. It was not necessary in that room and on that occasion to enumerate the works which Mr. Fergusson had contributed to the literature of architecture and its branches; he would simply say that they formed a really valuable acquisition to the Institute Library. (Hear, hear.) This country was indebted to Mr. Fergusson not only as an architectural historian, but for the valuable services which he had rendered as one of the Royal Commissioners on National Defences. High honours had been conferred on him at Oxford, and his appointment to the post of Secretary to the Commissioners of Her Majesty's Works and Public Buildings reflected the greatest credit on the late Chief Commissioner, Mr. Layard. (Hear, hear.) That appointment was universally popular in the architectural profession, and it was deeply to be regretted that circumstances had arisen on the appointment of Mr. Ayrton to the Chief Commissionership which had necessitated Mr. Fergusson's resignation of the secretaryship which he held with so much honour to himself and with such advantage to art and architecture. In conclusion, the President expressed the hope that Mr. Fergusson would on that occasion detail the circumstances under which he was led to turn his attention to architecture. He trusted that Mr. Fergusson might long live to wear the gold medal which he had the honour to present on behalf of the Institute. (Cheers.)

Mr. Fergusson, who was very warmly received, said he felt extremely flattered and gratified by the presentation of this medal, and by the manner in which he had been received. In response to the wish expressed by the President, he would explain the circumstances which had induced him to devote so much time to the study of architecture. He believed he was born with an architectural "bump," for from a boy architecture had been the delight and pleasure of his life, and the one ambition he had cherished from a youth was to be an architect. He was not, however, able to choose for himself, and was consigned to a counting-house. That counting-house, however, led him to India, and when he first went to the East, he entertained some hopes of being able to solve the mystery attaching to Indian architecture, which no one else had then succeeded in doing. During the ten years he was in India he spent most of his time in studying the architecture of the land and tracing its history, and in the course of his labours he came in contact with men who were building buildings in the same method as was known to have been followed in the building of the Mediæval cathedrals of Europe—that is to say, they were associated in confraternities or guilds. When he returned to England he determined to become an architect, but before carrying his resolution into effect he made two discoveries which induced him to alter his purpose. The first discovery was that architects were not then treated as they ought to have been, either by Government, judges of competition designs, or by the public at large, and this was by reason of the fact that the upper classes did not appreciate the art, and consequently did not appreciate the position of an architect. He also discovered that his principles or ideas with regard to the practice of architecture as a profession were wholly opposed to the methods pursued by the architects of this country. In his opinion, the system of copyism then in vogue, and now followed to a very great extent, was a mistake, and he was not prepared to follow that system. But he felt that if he set up as an architect, advocating and practising new principles, or at any rate principles entirely at variance with those generally followed, he should most probably have to sit still, waiting for commissions which would never be entrusted to him. He therefore abandoned all idea of becoming an architect, and determined to take to the literature of the art, as he thought it possible in that way to do more good to the profession and the public than by practising as an architect. The whole of his works were written by him with the view not of teaching architects, but with the hope of instructing the public, and leading them to a higher appreciation of architecture as a real living art. The one object he had had in view was to place the art in a popular and straightforward manner before the public, and to try to get them to believe in the art. In doing this he had often been misunderstood. He had always strongly objected to the copying system, and what made him prize the medal just presented to him more than anything else was that he regarded it as a token that the architects felt that, in whatever he had written, he was not actuated by any motives but those of regard for the good of the profession. (Cheers.) In conclusion, he would just state his views in reference to the practice of architecture as an art, and what he believed to be necessary to raise architecture to its original and highest aim. On one occasion he had heard one of the most eminent members of the Institute advise students to copy—to fill their copying books and keep them, so as to have materials for use hereafter. Now his (Mr. Fergusson's) advice to students would be "Copy all you can till you have learnt thoroughly to appreciate all that has been done before; but when you begin to practise, throw away or burn your copying books, and *think*." It was only when a man thought how he could build most conveniently, and ornament his structure most appropriately, that he might be said to be an architect. Until we went back to the real-thinking, earnest-working style, buildings appropriate to the time would never be erected. He had inculcated this theory honestly and earnestly, and he regarded the presentation of the medal as a testimony on the part of the profession that he was not entirely mistaken in his views. (Applause.)

The various prizes offered by the Institute were then presented by the Chairman as follows:—The Soane Medallion, with 50 guineas, to Mr. Craven. (The drawings submitted in this competition by Mr. Arthur Hill were deemed by the judges as worthy of "honourable mention.") The Institute Silver Medal, with 5 guineas, to Mr. Wyburn. Silver Medal for the best essay, to Mr. Alfred Jowers.

Mr. J. P. Seddon, Honorary Secretary for Home Duties, then read a paper "On the University College of Wales, and other buildings at and near Aberystwith." The "other buildings" referred to in the title of the paper are the ancient parish church of Llanbadarn-fawr, and Victoria-terrace, Aberystwith. Inasmuch as all of these works have been described and illustrated in the Building News,* we need not devote further space to them, especially as Mr. Seddon's paper of Monday evening last consisted in substance of the particulars already published by us, supplemented and fully explained, however, by a very large and beautiful collection of drawings and sketches. We should also state that Mr. Seddon obligingly came forward at the last moment, owing to the illness of his brother, Captain Seddon, R.E., who was originally announced to read a paper on that evening.

Mr. C. F. Hayward, in rising to propose that the thanks of the Institute should be tendered to Mr. Seddon for his paper, bore testimony to the extreme beauty of the detail in the College buildings at Aberystwith.

Mr. Angell, as a member of the University Executive Committee, no less than as an architect, cordially seconded the proposition. He had been greatly struck by the boldness and originality of the college buildings. Clearly Mr. Seddon had followed the advice of Mr. Fergusson, and eschewed copyism. He hoped and trusted, both for the honour of Wales and the credit of architecture, that Mr. Seddon would be allowed by the Committee to complete his design in its integrity, subject only to such modifications as Mr. Seddon might recommend as necessary in view of the altered purpose of the building. (Hear, hear.)

The thanks of the meeting having been formally tendered to Mr. Seddon, the proceedings terminated

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THE HANCOCK PROCESS OF ENGRAVING.

The large engraving in our opening pages this week represents the Hotel de Ville, Ghent, as it appeared and was lithographed forty years since. It has been reproduced by the "Hancock process." As we do not know the *modus operandi* of this process of reproduction, we will not attempt to describe it. Our readers, and we may say a large proportion of the British public, are, thanks to the Building News, familiar with photo-lithography. Previous to photo-litho' engravings appearing in our pages but very few knew any of the merits of the process by which they were produced. Now, inquiries are being made about it in all directions, and imitators of the Building News are doing their best to use it. But photo-lithography is subject to one serious disadvantage. It cannot, like a wood engraving, be printed with the letter-press. It must be printed on a separate and peculiar-quality paper. Our double-page engraving this week is produced by the Hancock process, and printed with the letter-press. This, for many kinds of work, is a great advantage, as it involves only one printing. Photo-lithography and the Hancock process of engraving are each advantageous in its way, and in many respects both are superior to wood engraving.

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The Exeter Local Board have before them two propositions for the disposal of the city sewage. In both cases offers are made, not only to construct the necessary works without asking the Board for assistance, but, on the contrary, to give some thousands of pounds for the sewage, and, at the expiration of twenty-five years, to hand the whole of the works over free of cost.

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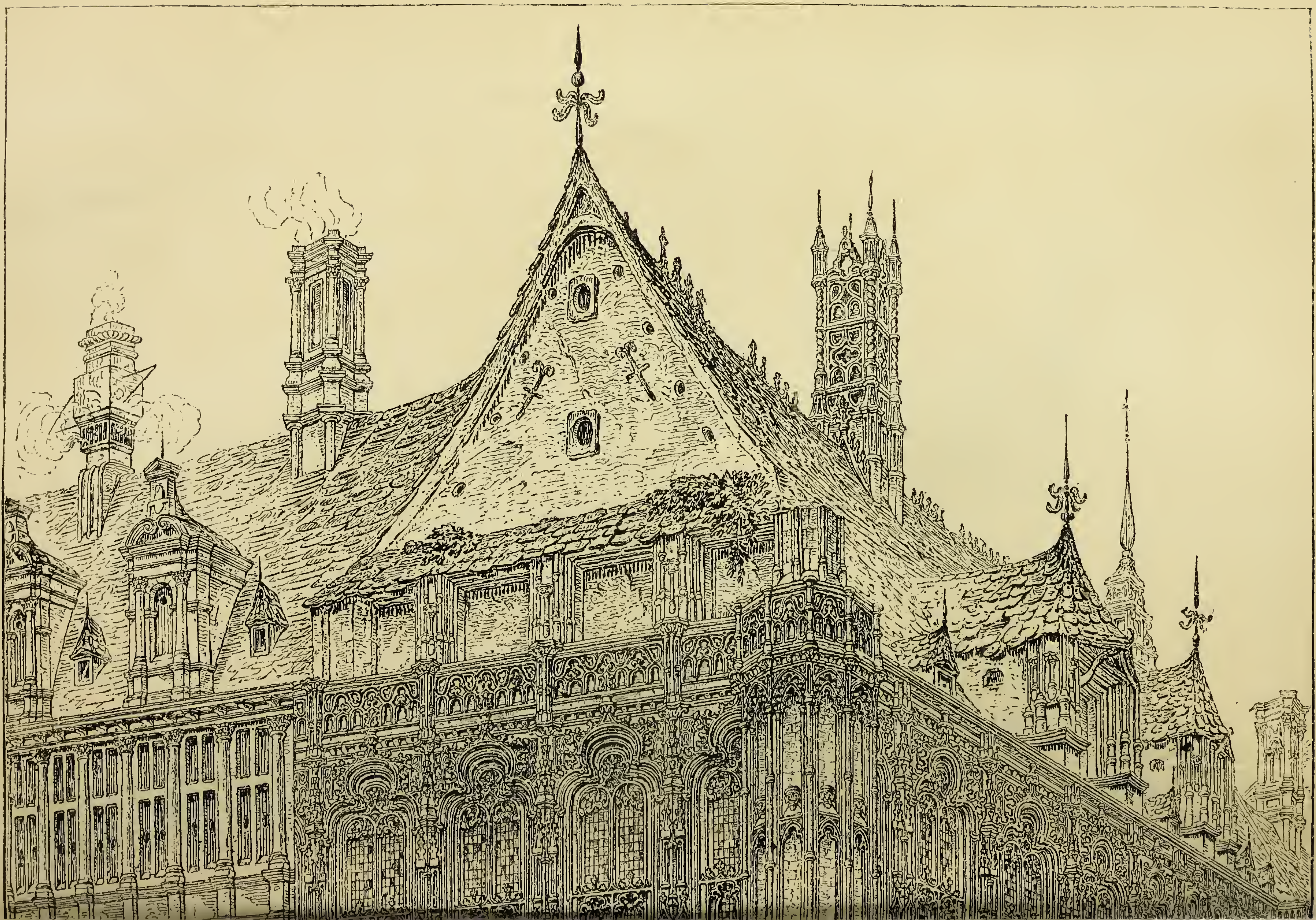
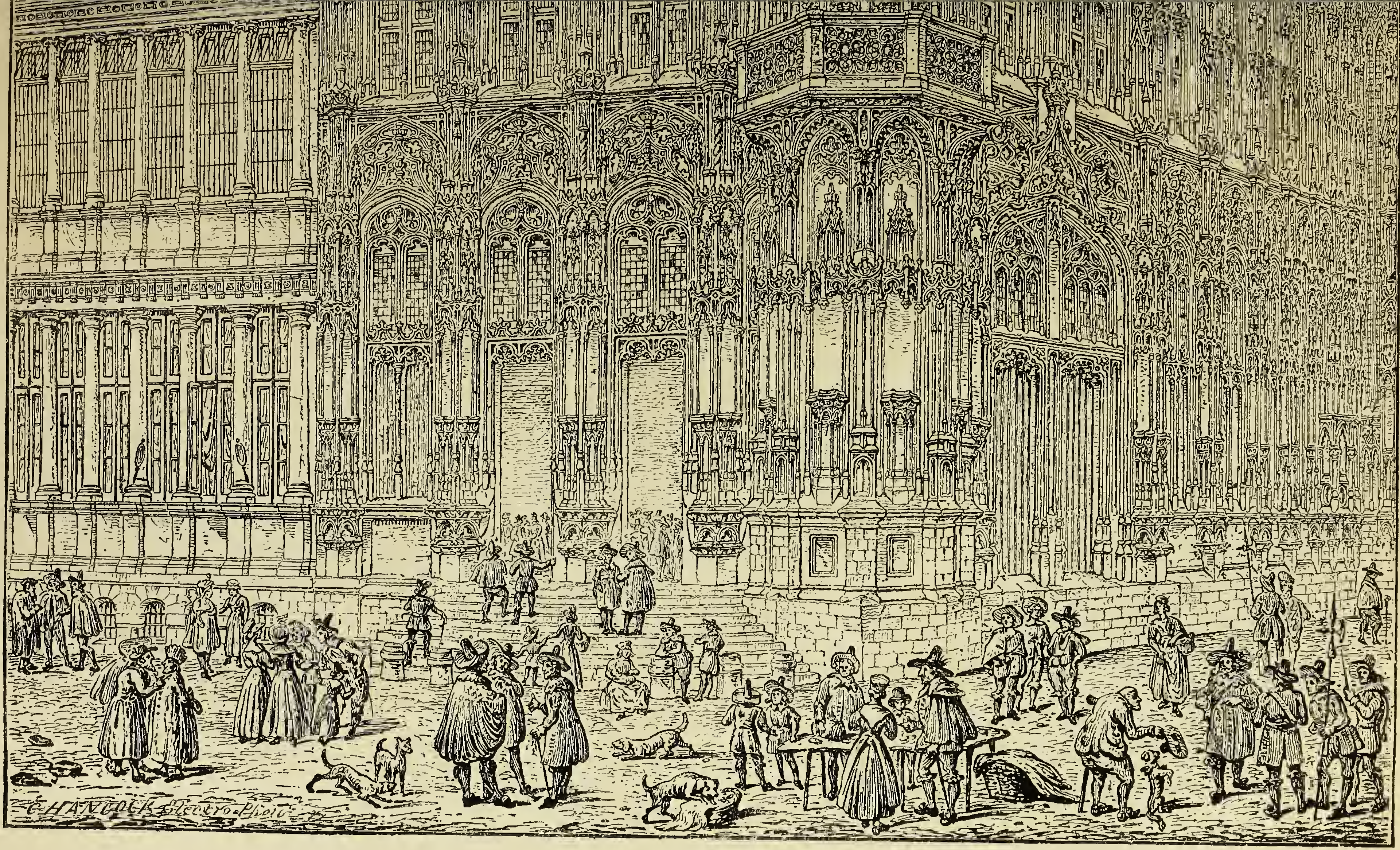
* A ground plan and entrance elevation of the College Buildings (then known as the Castle Hotel) will be found in the Building News for December 28, 1866, with an accompanying description. The principal staircase was illustrated and described by us only last week. Llanbadarn-fawr Church, as restored by Mr. Seddon, was described and illustrated at pp. 148 and 152 of Vol. XIX. of this journal. Victoria-terrace, Aberystwith, was described and illustrated by us in our number for March 17 last.





THE HOTEL DE VILLE, GHENT.

The Hôtel de Ville, Ghent, of which we give an illustration, was commenced in 1481. After a century of uninterrupted labour, the design was abandoned when barely two-thirds completed. Age has softened down its extravagances, and its picturesque appearance is pleasing, though scarcely beautiful. The profusion of ornament with which every part is loaded is frequently marked by very bad taste, and distinctly points to an age when pure art had departed, and architects strove to hide its absence by extravagant decoration. Had it ever been completed, it would have surpassed all other Belgian Town-halls in size and richness, but would still have remained unequal in beauty to those of Brussels, Ypres, and Louvain. The building was commenced under the direction of E. Polleyt. It is subdivided into two stories as to effect, though, in reality, there are more. The turret or tribune, with the part adjoining, is that by E. Polleyt (1527-60). The other façade (1600-20) has columns of three different orders superposed.

Furniture and Decoration.

GILDING AND ORNAMENTING ON GLASS.

BY AN EXPERIENCED WORKMAN.

(Continued from page 228.)

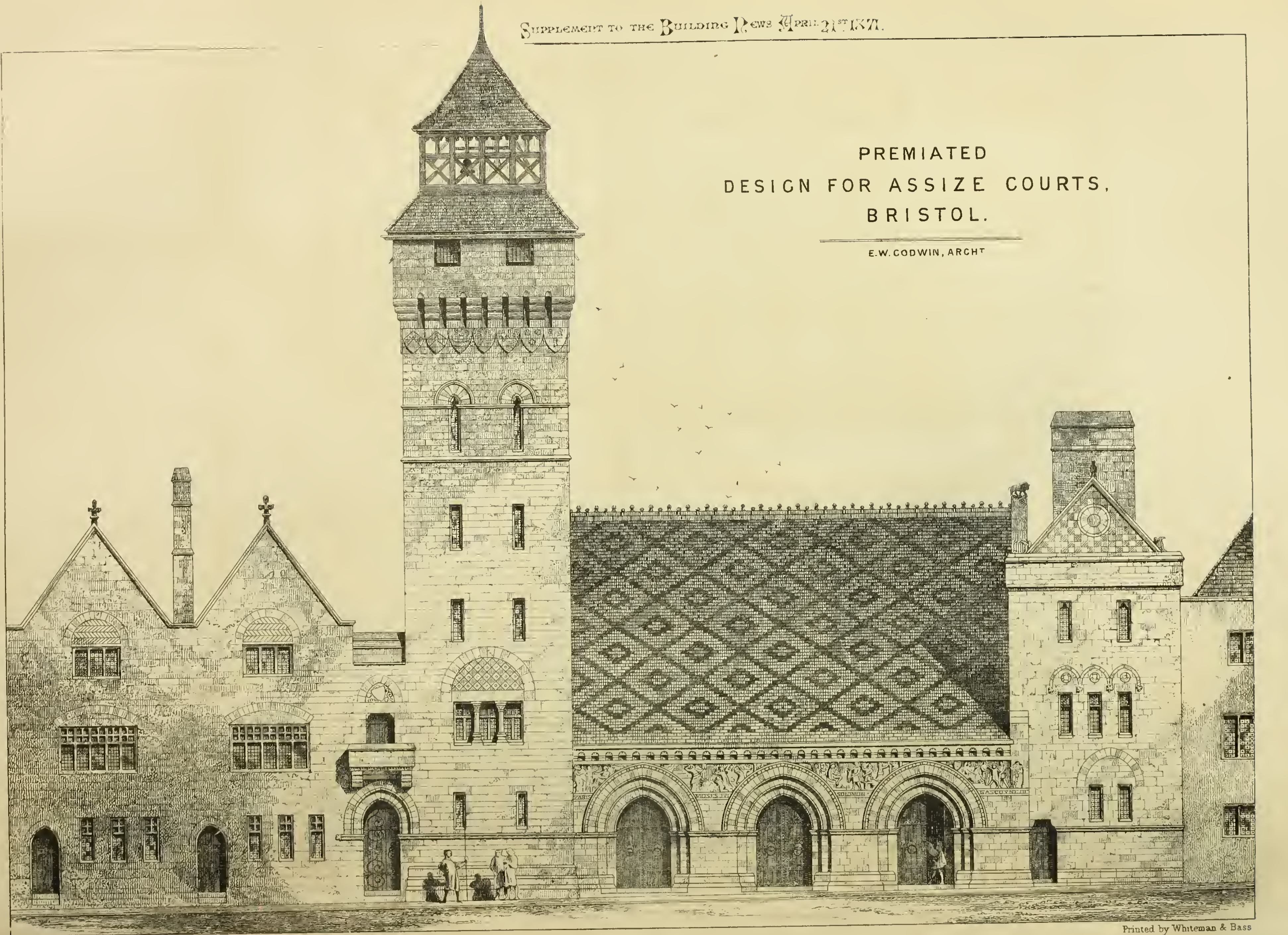
THE letter of "W. M." mentioned in "Office Table," March 24, refers to our article upon graining machines, which appeared in these columns on February 10th. "W. M." charges the author with being actuated by personal feeling in recommending one machine in preference to another. This charge is so utterly groundless that we should have refrained from noticing it, but that we are anxious that not a shadow of doubt should rest upon the fact that there is no process or machine we have described in these pages but such as we have ourselves used and fully tried in the regular course of work; and we unhesitatingly and confidently appeal to all practical decorators, grainers, marblers, embossers, and gilders, in support of the practical truth of even the minutest detail given of the various processes described. This being so, we can well afford to smile at unfounded charges, such as are evidently contained in the unpublished letter of "W. M." Having said thus much to reassure those who put some faith in what we have written, we proceed to more congenial matters.

Gilding upon glass with gold and silver leaf is a means of decoration, as we have before stated, which might, and which we believe will, eventually have a much wider application to decorative purposes than it at present obtains. Sign-writers seem to have a monopoly of the art, and we are rather inclined to think that this fact has something to do with the neglect or indifference with which it is treated by decorative artists. It is true that japanners make much use of glass gilding for inserting in various domestic utensils for the drawing and dining room—fancy boxes, photographic glasses, and various useful and ornamental articles; but we think the work capable of being used for a much higher class of work, if properly and artistically handled. Beautiful contrasts of every combination of dead or matt and burnish and gold of several shades of colour, and silver, may be used in combination with colour in this kind of decoration, and any tint of gold and silver leaf may be used with perfect immunity from danger of tarnishing, because the glass protects the gold from the influence of the atmosphere; and, in fact, if the work is properly done, there is scarcely any limit to the time it will last. If the work is kept from direct injury by being scratched or chipped, we have no reason to doubt its being as little liable to decay as any kind of painting which can be done; in fact, we may say it is less liable to actual decay, inasmuch as it is protected by the glass in front, and by either wood boards or glass at the back, thus rendering it impervious to the action of foul air, and making it a permanent decoration, which will remain for ages fresh and clean as the day it was done, and which also may be cleaned without injury, and is suitable for any position. The polish of the glass will no doubt appear to some persons to be an objection to its use in some situations and for some purposes, but we think that this difficulty may be in a great measure obviated by a judicious use of colour. Wall paintings have occasionally to be covered with glass to protect them from atmospheric influences, a recent notable example being the frescoes in the lobbies of the Houses of Parliament, which have just been so covered. Now, we see no valid reason why works of a high class may not be painted on the glass; or if not painted directly on the glass, they might be painted in such a manner, or by such a method, that they would be easily transferred to the glass after being painted. It is a common practice to paint a figure subject or a landscape in oil upon either silk, canvas, or paper; the work is then varnished, and while the varnish is wet, the painting is put upon the glass, and all the air carefully pressed out from underneath, and thus the painting is secured to the glass; in fact, this plan is, so far as we know, the only really successful method of effecting this object, for it will be evident that the difficulty in the way of painting on the back of the glass so as to appear as a finished painting upon the front side, is almost insuperable, simply because the glazing and finishing touches, high-light, &c., used in ordinary painting would have to be done first, and the opaque or solid colours and ground colour last, thus reversing the process entirely. This is, of course, a totally different process to that used in glass painting or staining proper, but we see no real difficulty in transforming a finished painting to glass in the manner above described; and although its adoption and practical use would be attended with some difficulty, still we think that in many cases, even as regards pictures or representative subjects, much may be advanced in its favour. But with regard to decorative subjects we have no manner of doubt whatever. Decorative ornament and decorative design afford a wide field for its application, but would necessitate the most careful treatment, in order to avoid vulgarity, the great difficulty being to avoid gaudiness or a too-violent contrast. The glass lends so much splendour to the gold and colour that it is very difficult indeed to avoid garishness; but when the colouring is kept quiet, and in perfect harmony with the gold and silver, we obtain a richness of effect and a perfection of finish which is scarcely possible in painting upon any other material. We cannot see any objection to this style of decoration being used for the panels of doors and architraves, in combination with embossed ornament, the friezes of the entablatures of our doors, wall panels, certain portions of ceilings, panels of sideboards, wardrobes, bookcases, &c., &c.; on all these suitable designs might be introduced emblematical of the uses to which each is put. Its brilliancy and permanent character should be a great recommendation. It is true that there is an objection which many persons will be ready to urge against our view of this matter—namely, the risk of breakage; but the same objections might be urged against canvas, for it is quite certain that the force required to break a plate of glass a quarter of an inch thick would most certainly knock a hole through canvas; but, putting that aside, we might with equal force apply the same argument to all articles of *vertu* which are made of glass or clay—vases, Bohemian glass, Sèvres china, majolica ware, mirrors, and all the thousand gems of art we prize beyond rubies and fine gold. Therefore we think the argument goes for naught; at all events, the suggestion is worthy of the serious consideration of the decorative artist. Chemists and druggists make much use of this style of decoration. The large show jars (specie jars) seen in their shop windows having the pharmaceutical arms and various other nondescript designs and legends emblazoned upon them are gilt, etched, and coloured in this style. All designs and inscriptions done upon the glass have to be done backwards way—that is, they have to be done on one side of the glass to be seen or read on the other side. which necessitates the whole of the design being worked from the back. This is not so difficult as it seems at first sight, in working upon flat surfaces; but in the case of the large specie jars spoken of above, the design and letters, in addition to being done backwards, have also to be done upside down. The design has to be worked through the opening at the top of the jar, which is not so large as the body of it, which fact, of course, increases the difficulty. Many of these designs comprise figures of men, animals, and reptiles; and when we consider that these are shaded, and etched, and coloured with the figures and letters upside down, and with the arm thrust through a hole at the top, and also that the surface of the glass is cylindrical, we must give the artists great credit for the pursuit of art under unexceptional difficulties. Many beautiful designs, being combinations of ornament and letters or inscriptions, are done in this style for the decoration of the interior and exterior of shops. Very large sums are expended by enterprising tradesmen for this purpose, for which it is admirably suited in every way—door and window plates of glass, instead of the ordinary engraved and brass plates. It is a mistaken notion that brass plates for business purposes are the cheapest and best in the end; this is not so. If we only take into consideration the difference in the time required to keep them clean, we shall find that the advantage is immeasurably in favour of the glass. In fact, we are convinced that the whole of the original cost of the work is ultimately saved in this item alone; and if we contrast the appearance of the two, and the variety of treatment the one is capable of, and which cannot by any possibility be applied to the other, we shall find that every consideration is in favour of the glass. This being the case when this style of work is applied to business purposes, we consider the fact a further argument in favour of gilding and ornamenting on glass being used to a much greater extent, and for a much higher class of decoration than it has hitherto been. When the gilding and silvering are done in combination with embossing, very beautiful work may be produced; for instance, if we take an embossed plate, having the whole of the glass obscured except the ornament, and then gild or silver the ornament alone, a chaste and beautiful effect is produced; but this will require the embossing to be cut sharp and clear on the edges. The gold will not be so clear and bright as it is upon the plain glass; but if, in addition to the ornament, we emboss a fine line at a distance three sixteenths of an inch from the edge of the ornament, leaving a margin of plain glass about one-eighth of an inch running all round the ornament or letters, we thereby produce an effect as of matt and burnish. The plain margin will have a brilliant burnish, which, by contrast, will cause the embossing to appear almost dead or matt; and these, in contrast with the obscured ground, will have a beautiful effect. We may also use coloured grounds instead of the obscured or ground glass, and in this case we may put any width of burnished gold margin to the embossed ornament without embossing the outline.

(To be Continued.)

LAYING VENEERS.

THE *American Artizan*, in an article on this subject says two methods are ordinarily resorted to in veneering such curved surfaces as occur on the pillars and blocks of tables, fronts of sideboards, or on mouldings in general: the one is to strengthen or support the natural tenacity of the veneer on its being bent; the other, to increase its flexibility. The former is effected by gluing on the outside of the veneer canvas or calico, to preserve it from fracturing under the unequal pressure of the caul while the veneer is being pressed down; the latter, by subjecting the veneer to the action of moist steam, a process similar in principle to that employed by shipwrights in bending their planks to the required curvature. Veneers having a strong roe or curl, from the extreme irregularity of their grain, suffer by being subjected to a sharp heat or to extreme moisture, their contractions and expansions being so very unequal that they speedily fracture; accordingly, they require to be carefully covered with canvas whenever they are laid on a curved surface, and in all circumstances must be cauled down. When the veneer for any surface consists of several pieces, and these marked by a waved or extremely irregular figure in the wood, as frequently occurs in rosewood, or without any decisive indications of grain or direction of fibre, as in Amboine wood, yew tree, oak root, or bird's-eye maple, it is customary, in forming the joints, to follow the prevailing direction of the figure in the wood, or to join the pieces together in lines which are least likely



PREMIATED
DESIGN FOR ASSIZE COURTS, BRISTOL.

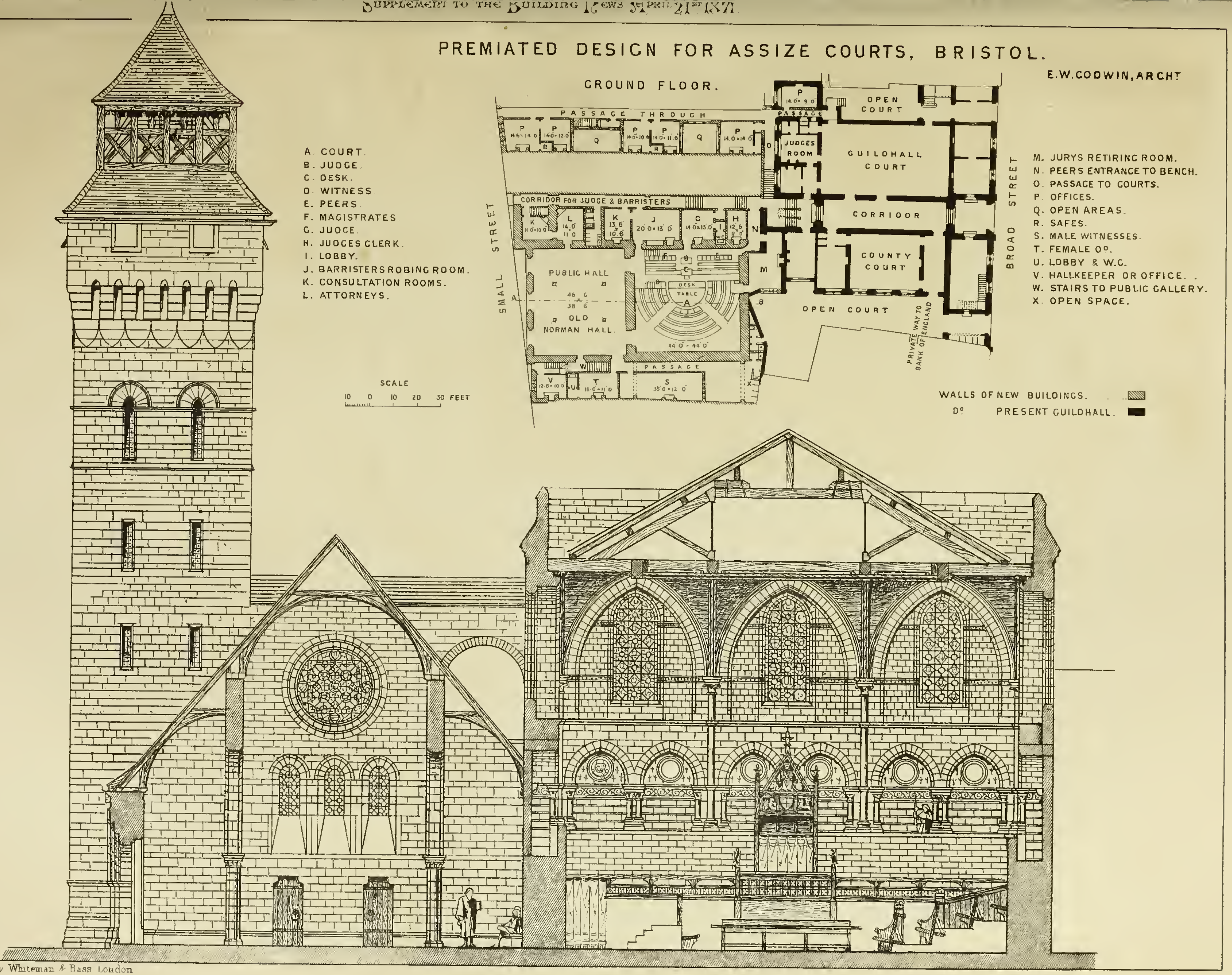
E.W. CODWIN, ARCHT

H Abbott Lith

Printed by Whiteman & Bass

PREMIATED DESIGN FOR ASSIZE COURTS, BRISTOL.

E.W.GODWIN, ARCHT



A. COURT.
B. JUDGE.
C. DESK.
D. WITNESS.
E. PEERS.
F. MAGISTRATES.
G. JUDGE.
H. JUDGES CLERK.
I. LOBBY.
J. BARRISTERS ROBING ROOM.
K. CONSULTATION ROOMS.
L. ATTORNEYS.

M. JURYS RETIRING ROOM.
N. PEERS ENTRANCE TO BENCH.
O. PASSAGE TO COURTS.
P. OFFICES.
Q. OPEN AREAS.
R. SAFES.
S. MALE WITNESSES.
T. FEMALE Dº.
U. LOBBY & W.C.
V. HALLKEEPER OR OFFICE.
W. STAIRS TO PUBLIC GALLERY.
X. OPEN SPACE.

WALLS OF NEW BUILDINGS. ▨
Dº PRESENT GUILDHALL. ■

Photo-Lithographed by Whiteman & Bass London

to be detected by the eye in the finished work. To effect this, the edges of the veneers are lapped on and glued to each other; after the glue is dried, a fret-saw is made to pass through both thicknesses together, tracing by the cut the intended line of the joints, which, on the superfluous wood on both pieces being chipped off, are quickly and perfectly formed. These waved joints in the veneers, when the required conveniences are at command, are better, and as expeditiously made, by this method, as those that are straight and wrought by the plane; they are, besides, often more economical than the others in the saving of veneer, and, under the circumstances supposed, always more elegant. The joints, after being prepared in the above manner, are put together in the dry state, and connected by slips of cloth glued over them. On these being dried, the veneers are then cauled down.

Veneers are laid by two methods—by the hammer or by caul. Hammering is a process of easy application when the veneer is of a mild and pliant nature. For some work, this method is more convenient and expeditious than cauling—such as for border finishing, for slipping, for cross or feather banding, the laying of sweeps, and generally for small work. Some extensive surfaces, not otherwise easily accessible, are best to be done by the hammer; such as the tops of sideboards, or commodes, when these are clamped to thickness from under. Hammered surfaces are not generally so secure in standing as those that are cauled, in consequence of the veneer requiring on be moistened on its upper side with water or thin glue, to counteract its tendency to curve up from the ground, and also to admit of the hammer gliding easily over the surface. The handle is fixed into the head, low down, so as to give the operator greater leverage power over it. A blade of steel, one-eighth inch thick, is inserted into the head below, having its under edge rounded along its length, so as to concentrate the pressure exerted on the hammer, and assist the smoothness of its action. The form given to the head above furnishes at once a good hold and an easy rest for the hand. In laying a large veneer with the hammer, the assistance of several hands is required; the ground and veneer are gently heated previous to the gluing; the glue is then spread on both, and the veneer, on being laid on the ground, is coated over with thin glue, and rubbed down with the outstretched hands of several persons.

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The Blackfriars and Camberwell Tramway.—Rapid progress is being made in the construction of the tramway from Blackfriars-bridge to Camberwell-green, and a portion of the line in the Walworth-road, from the Elephant and Castle to Draper-street, is already finished, the surface of the roadway between and on either side of the trams being paved with the Val de Travers asphalte. The rails are laid on wooden sleepers, embedded in Portland cement concrete; the asphalte is laid over this concrete. At the Camberwell end the line will join the Pimlico, Peckham, and Greenwich line, and at the City end, leaving the Elephant and Castle, it will be carried along the London-road and the Blackfriars-road. In the last named thoroughfare a large number of men are engaged in excavating the surface of the road for the reception of the rails and sleepers.

Fatal Accident to an Architect.—On Tuesday afternoon Mr. Payne, the City coroner, held an inquest on the body of Mr. William Henry Dean, aged sixty-seven, a retired architect and surveyor, residing at Stratford. It appeared that shortly before two o'clock on Saturday afternoon, Mr. Dean arrived at the Fenchurch-street Railway Station for the purpose of returning home by train. He hurried up the steps leading to the middle platform, and was seen walking along, and just as he came up to the engine of a Woodford train, which was coming into the station, he staggered and reeled against the side of the tender, and as he was falling his chest struck the step of the guard's break, and the deceased was whirled round several times before the porter could extricate him. He breathed once or twice and then died. Dr. Little said that the deceased was much bruised about the head and face, and there was a very severe wound on the back of the head. He was inclined to the opinion that the deceased was seized with giddiness, and then a fit, which was the cause of death, hastened by the injuries which the deceased had received. The injuries, however, were quite sufficient to produce death. If he had fallen on the platform in the fit, without coming in contact with the train, probably he would have died. The coroner having briefly summed up, the jury returned a verdict of "Accidental death, the result of accidentally falling against a train, while the deceased was in a fit."

Civil Engineering.

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VIADUCTS ON THE CAMBRIAN RAILWAYS.

THE following is an abstract of a paper, "Description of Viaducts Across the Estuaries on the line of the Cambrian Railway," read by Mr. Henry Conybeare, M. Inst. C.E., before a recent meeting of the Institution of Civil Engineers:—

The coast line which this section of the Cambrian Railway followed for nearly 86 miles was indented by numerous estuaries, which were crossed by viaducts having an aggregate waterway of upwards of 5,000 ft.; most of these estuaries were very shallow, and the line traversed them on timber staging; in all cases, however, the viaducts across the low-water channels were permanent constructions, with wrought iron superstructures resting on cast iron piers.

The viaduct over the tidal water of the Dovey had an opening span of 35 ft., on the principle first used by Mr. Brunlees, M. Inst. C.E., in the viaducts in Morecambe Bay. The channel was not more than 3 ft. deep at low water of spring tides, and as it was important to complete the bridge as rapidly and as cheaply as possible, the author employed ordinary piled foundations, fixing a cast iron splice at the top of each timber pile, and driving it with it so that the whole length of the timber should be sunk in the bed of the channel. So placed, timber piles would last as long as cast iron; they afforded a much cheaper foundation, and one more rapidly executed than screw piling. A similar expedient was adopted in constructing the fenders for the opening span of the Barmouth viaduct.

The construction of the viaduct over the estuary of the Mawddach, at Barmouth, presented some difficulties, owing to the peculiar character of the foundation, and to the extraordinary velocity of the current at certain times of the tide. This viaduct had a waterway of 2,600 ft. The estuary extended about 10 miles inland, and at the point where the railway crossed it, was constricted to less than one-half its normal width, by the projection from Cader Idris of a craggy promontory, called Figle Fawr. The deeper water (54 ft. at ordinary spring tides) was close to the northern shore, and the northern bank, which was of basalt, shelved down almost precipitously into deep water; beyond this the bed of the channel was of sand, constantly shifting and varying in depth from 2 ft. to 8 ft. Below the sand was a bed of compact gravel from 6 ft. to 8 ft. deep; and below this again a peat bog, to a depth not passed through in the preliminary borings.

The piers next the northern bank were placed on shelving rock, and were necessarily cast iron cylinders. But the unknown depth of the peat under the other portions of the channel rendered the employment of cylinders inapplicable for the remaining piers, and screw piles were consequently used. The bed of the gravel over the peat was all that could be depended upon to carry the bridge, and as this was too thin to be loaded heavily, the spans were reduced to about 40 ft.; and in order to equalise the load on the piles, and to distribute it over a large area, the six piles of each pier were arranged in two equilateral triangular groups of three each, the upper lengths of each group forming a tripod. The diameter of the screw discs was 3 ft., and the load about 2½ tons on each square foot of their surface, which was about one-half their sustaining power; after the surface of the channel had been covered with stones, this bearing area was supplemented by discs of 4 ft. and 4 ft. 6 in. in diameter, which were bolted on to the piles and rested on the stone work. To avoid weakening the crust of gravel on which the stability of the bridge depended, the screw discs of the piles were placed 8 ft. up the piles. The inconvenience inseparable from this mode of construction, when applied in such an exposed situation, was attributed to the fact that the piles of which the pier was composed—though sufficiently strong collectively when the pier was complete, and all its constituent parts firmly braced together, to withstand any stress of weather—had little individual strength when standing singly, or remaining unbraced, while the pier was in process of erection. The works, therefore, were somewhat delayed by piles being broken, and the staging for them was swept away during heavy gales while the piers were in progress; but there was no instance of the slightest accident occurring to a pier after the bracing was once completed. Considerable difficulty was experienced in sinking the cylindrical piers owing to the velocity of the current, and the works had on one occasion to be suspended for some months.

The opening span was 47 ft. between the points of support, which was contracted to 36 ft. by the fenders. The description of drawbridge to be employed in closing this opening was determined by the specialties of the foundations of the pier from which it was projected, which were on hard rock, shelving abruptly in a direction transverse to the axis of the bridge. Hence a swing bridge was out of the question, and there only remained the telescope or sliding drawbridge. Of these there were two varieties, the under drawbridge and the over drawbridge. The former was devised and first employed by Mr. Brunlees, and was that adopted by the author for the opening span of the Dovey viaduct. The over drawbridge was less generally known, but one had been erected some years previously at Rhyl, and had worked satisfactorily. Irrespective of its general mechanical advantages of working more easily and of being lowered into position instead of being lifted up into it and supported in it, the over drawbridge was much better adapted to the requirements of the Barmouth site, in respect to foundation, than the under drawbridge, for the latter required at least a second row of piles for the support of its sliding drawbridge, and as this had to be withdrawn between and within the supports of the contiguous bay, its width was either restricted, which in this case would have interfered with the footway alongside the railway bridge, or the intervals of the piles it slid between were unduly increased.

ON THE NEW ROSS BRIDGE.

A paper was read on the 28th ult., at the Institution of Civil Engineers, on "The New Ross Bridge," by Mr. Henry N. Maynard, M. Inst. C.E.

The author stated that this bridge was built over the River Barrow, in Ireland, on the site of an old wooden structure, which was swept away by ice, and where the river was navigable for vessels of 2,000 tons burthen and was 650ft. wide and 38ft. deep at high water of spring tides, there being a tidal range of 25ft. The bed of the river was chiefly sandy clay or marl, with thin layers of *debris*, the marl varying in hardness, and overlaying a bed of about 7ft. of gravel, under which was rock. The timber bridge was composed of mere trestles, resting on the mud, at intervals of 25ft., and covered with joists and planking, having a portcullis of 30ft. opening, and it was said to have cost about ten shillings per square foot of surface.

The new bridge was of iron, and had been designed by Mr. James B. Farrell, M. Inst. C.E., Wexford, and Mr. P. Burchall, Kilkenny. It consisted of four spans of fixed lattice girders, each 88ft. in the clear, and of a swing bridge having two openings of 50ft. each. The roadway was 32ft. wide, comprising two footways each of 5ft. 6in., and a carriage way of 21ft. The road was carried between the lattice girders on crossed girders and buckled plates, these plates being covered with 6 in. of Portland cement concrete, then a layer of asphalte 2 in. thick, upon which was made metalling 4 in. thick, except over the swing spans, where a wooden floor, cambered like a ship's deck, was laid.

The piers were pairs of cast iron cylinders sunk to the rock, 9ft. in diameter at the base and 7ft. in diameter at the top, having one taper length below low water to connect them, and filled with Portland cement concrete. The central pier, under the swing span, was formed of a cluster of five cylinders braced together, upon which a strong circular girder formed a roller path for the bridge to turn upon, the turning being performed by chain and wheel gear.

The abutments of the bridge were to have been built of masonry; but at the author's suggestion iron was substituted, thereby saving much time and money. These abutments were composed of three cylinders, each 7 ft. in diameter, and of cast iron plates filling the spaces between them and forming also the wings. An ornamental stone parapet was built on the top of the wing plates, at the back of which, as well as inside the cylinders, concrete was deposited.

Considerable difficulty was encountered at first in sinking the cylinders. It was hoped that sufficient clay would be found to hold back the water. After building up a cylinder 45ft. high, it was lowered to the bed of the river and found to reach sufficiently above the water level for the attachment of another length. The interior was then excavated by the sand pump, until the cylinder had sunk 14 ft., when an additional length was added, and weighted as before. After remaining a few hours this suddenly sank 13 ft., carrying away some of the braces of the staging, which were not arranged for so great a movement. When the damage to the stage was made good, the water was pumped out of the cylinder, but the inside could not be kept dry, for as soon as the earth at the bottom was disturbed, the men were driven out by water coming up through it. Compressed air apparatus was then used, and the earth excavated to the lower edge of the cylinder. on the pressure of the air being removed the cylinder immediately went down another 13 ft., and on examination there was found to be a depth of 20 ft. of earth inside. This earth was taken out until good hard gravel was met with, into which the cylinder had penetrated 5 ft., and as this gravel immediately overlaid the rock, it was deemed a sufficiently good foundation. Various means were tried to pump out the earth from the inside of the cylinders, but it was too tenacious to be removed satisfactorily in that way. Mr. Milroy's excavating apparatus was also used, and acted very well, but it was eventually found necessary to complete the work by compressed air apparatus. All the cylinders in the bed of the river were subject to descend suddenly from 6 ft. to 13 ft., when they reached a certain stratum, and after the first was sunk suitable arrangements were made in the staging to meet this. The time occupied in sinking a pair of cylinders to the proper depth was about ten weeks. On one pair operations were commenced on the 3rd December, and the excavation was completed on the 5th February, by means of the sand-pump and Mr. Milroy's machine. The compressed air apparatus was then fitted on, and the cost of the whole was about £250 for labour, exclusive of the use of staging and tools.

Owing to the difficulty in fixing the piers in this river, the author was led to design an open braced pier for similar cases, and stated that if it had been adopted here, a saving would have been effected of £8,000, and the work would have been executed in less time. This pier would consist of a cluster of four braced tubes of cast iron, connected together as one, with solid wrought iron screw piles passing through them; the old braced structure, with its screws being lowered through the water and the screws driven down inside the tubes, sliding through the latter in a telescopic manner, until they reached the hard bottom of gravel, the bracing forming a guide and stage for the screwing down, and afterwards becoming a permanent portion of the structure.

The ironwork in the piers and abutments weighed 1,182 tons, and in the superstructure 650 tons. There were besides of other materials, masonry, 10,656 cubic feet, concrete 2,000 yards, timber 3,000 cubic feet, and timber in dolphins 9,750 cubic feet.

The work was executed by the Messrs. Kennard Brothers, of Crumlin, under the author's superintendence, and was commenced in April, 1868, the roadway being opened for traffic in July, 1869. The total cost was £36,250, or about £2 5s. per square foot of surface. The cost of fixing, including the staging, was £7 9s. per ton of iron.

PERUVIAN RAILROADS.

Peru is constructing three great railroads to connect her coast with the countries east of the Andes. The one from the coast to Arequipa, and across the Andes to Puno, and thence to Lake Titicaca, on the dividing line between Peru and Bolivia, is progressing favourably. Forty miles have been finished between Arequipa and the coast, and traversed by powerful engines with construction trains. There are 6,000 labourers at work on the road. The difficulties of the mountainous ground are tremendous, but have been triumphantly overcome. Many of the huge cuttings and embankments have called out the highest kind of engineering skill. Within six months the ancient city of Arequipa, founded by Pizarro, away up in the vale of the Andes, will be in close communication with the coast. The region around Arequipa is rich in silver and copper mines, and produces cotton, wool, sugar, and nitre, the exports of which have been comparatively inconsiderable for want of cheap transport. This the railroad will give, and will inspire new life into the commercial and social relations of those productive but hitherto little known elevated valleys of the Andes.

Old Wooden Water Mains in the City.—During the relaying of a new line of metal pipes through Gracechurch-street lately, several trunks of stout elm, varying in length from 8ft. to 10ft., have been unearthed. They present an irregular form, exactly as they grew when living trees, the bark remaining attached to many of them. Some of them are from 18in. to 24in. thick at one end, but of course they are thinned down at the other extremity to enable them to pass a few inches into the bore of the other lengths of piping to which they were attached. The bore does not run uniform in some of them, and varies in diameter from 6in. to 9in. These old trunks are in tolerably good preservation. It is well known that the water of the New River Company was first introduced into the City by means of these wooden pipes.

ARCHÆOLOGICAL.

Discovery of Stone Coffins at Rouen.—Several stone coffins, probably containing the remains of monks of S. Onen, have been discovered in the garden of the Hôtel de Ville of Rouen, the site of the ancient Presbytery. Some of the coffins are hewn out of solid stone, while others are built of stones from ancient buildings, cut in the Roman fashion. The Abbé Cochet, who has superintended the excavations, declares that one of the coffins is of the seventh century.

Mediæval Glass.—At a recent meeting of the Society of Antiquaries, the Rev. A. Pownall exhibited a glass bottle of peculiar shape which had been found in the foundations of a wall at Lutterworth Church. Mr. Pownall also exhibited another bottle, of almost precisely the same type and make, which had been found among the foundations of the chancel wall of South Kilworth Church—a wall built between 1390 and 1420. Mediæval glass of ascertained date is so extremely rare that any specimen is of great interest.

Remains of a Roman Villa near Croydon.—Within the last few days some remains of an extensive Roman villa have been discovered in the vicinity of Croydon. The building stood east and west, and the site is not far from being exactly north-east from Beddington Church and Hall, and about a third of a mile from them. A chamber, 16ft. 5in. by 9ft. 11in., has been uncovered, and an opening from this leads into a small semi-circular apse in the north-west corner. A second chamber, which appears to be the base of a small tower, is partly beyond the north-east corner. The internal dimensions of this are only 3ft. 1in.. by 7ft. 9in. Part of a third chamber or passage, 5ft. 6in. wide, has been met with east of the former ones, and several walls lead temptingly away from the uncovered portions. The walls are only about 18in. high, and average about the same in thickness. They are constructed of rough flints, with a large admixture of the well-known flat Roman bricks, and have been plastered internally and externally. Some of the fragments of plaster met with in the excavations still show bright broad bands of red colour on a white ground. Numerous fragments of coarse pottery have been met with, but only one piece of Samian ware, and also portions of scored flue tiles, showing that the building possessed a hypocaust. Three coins only appear to have been found. These are of Commodus, Constantine the Great, and Constans, and are very much worn. The chambers have all been paved with flat tiles on a bed of concrete. The site is almost level, and on very low land. There was nothing above ground to indicate the existence of ancient walling beneath, and the ground, which is fully 2ft. deep above the walls, seemed to be quite undisturbed. The land around the spot where these remains have been discovered is full of organic remains, but no fragments of building have been met with elsewhere.

Arabic Numerals in Wells Cathedral.—Mr. Jas. T. Irvine, of Coomb Down, Bath, writing to *Notes and Queries*, says;—Since the restoration of the west front of Wells Cathedral began it has been discovered that in the line of subjects representing the Resurrection of the Dead, each group has had a number marked on it. In the space over end of north aisle of nave the figures of A. 8.9. occur, which are Arabic numerals almost precisely as used in the present day. These sculptures are of early date, and not like those of the three top rows, containing the figure of our Lord, the row of apostles, and that of angels, all of which are of Perpendicular date, though evidently not the work of one artist. The rising figures of kings, queens, and bishops have crowns or mitres over their heads, otherwise they are naked. The tomb slabs are all plain; but, from their general shape, together with those of crowns and mitres, the sculptures cannot date later than the Early Decorated period. The general character of the other numerals seen does not agree with the figures used during the Perpendicular period. As the restoration proceeds a greater variety of the figures will be seen, and perhaps further information obtained. The material used is the local Doulting stone, so that the work was executed at or near the spot; but the use of these figures seems to raise a doubt, in so far as, if the artists were local men, their numerals of this sort were used commonly much earlier than is generally supposed; or, if otherwise, the carvers were brought from a district where these numbers were known to a country where they were not generally used or known, to execute the sculptures. No letters have as yet been seen on any of them, nor masons' marks, though masons' banker-marks are abundant on the cathedral and in the bed-joints of the stones of the west front. Mr. Irvine would like to be informed of any authentically-dated early examples in England.

Building Intelligence.

CHURCHES AND CHAPELS.

Abthorpe.—On Wednesday week the parish church of Abthorpe was re-opened for divine worship, after having been nearly wholly re-built. The old church consisted of a nave, north aisle, south porch and chancel. The new church which takes its place is considerably more commodious. It consists of a nave, north and south aisles, chancel with a south aisle, and minister's vestry on the north side, north and south porches, and a tower and spire, so that it will be seen considerable additions have been made to the original structure. The church, which is situated in the most conspicuous part of the village, is in the Early English style, and is built of local stone, with Bath dressings, the general finish and completeness of the work being greatly to the credit of the builder. Internally, the edifice has a high-pitched roof with open timbers. The porches have also high-pitched roofs with open timbers. The cost of the work will be about £2,200. The work has been done from the designs of Ewan Christian, Esq., architect to the Ecclesiastical Commission, Whitehall-place, London, the builder being Mr. Robert Walpole, contractor, of Stony Stratford, Bucks.

Berkhamsted.—On Friday last, Berkhamsted Church, a beautiful relic of Early architecture, was reopened after a thorough restoration by Mr. W. Butterfield. The structure is cruciform, with a central tower, nave, side aisles, chancel, and north and south transepts. Two large groined chapels of great interest open out eastwards from the north transept, and one chapel with recessed tombs in its south wall opens out eastwards from the south transept. The sacred edifice is of various dates of architecture, from the twelfth to the sixteenth centuries, and is of fine proportions. The nave has a lofty clerestory and an imposing west end, which has been nearly rebuilt. The old work has been faithfully copied in all cases. The outside face, doors, and windows of the entire building had so far perished many years since that the whole had been repaired and coated with plaster. The church externally was, in fact, a ruin, but it has now been thoroughly and substantially restored, excepting only the south wall of the nave, for which the funds subscribed were insufficient. The old-fashioned and inconvenient box pews have been removed, and their place supplied by open seats. The total cost up to the present time has been about £5,000.

Brighton.—A new chapel has been erected in North-street. The frontage is of Kentish Rag, from Maidstone. The dressings and spire are of Bath stone. The tower and spire are 113ft. high. There are three arched doorways in front of the church, divided by polished red granite shafts, the spandrels of the arches being richly ornamented with medallions. Mr. J. Wimble, of London, was the architect, and Messrs. Myers and Son the builders.

Church Extension.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its usual monthly meeting on Monday last, at 7, Whitehall, S.W., the Rev. Canon Nepean in the chair. Grants of money were made in aid of the following objects, viz.:—Building new churches at Clayton West, in the parish of High Hoyland, Yorkshire; Croxley Green, in the parish of Rickmansworth; Kilburn, S. John the Evangelist, Middlesex; Newsome, in the parish of Lockwood, near Huddersfield; Pallion S. Luke, in the parish of Deptford, Sunderland; Primrose-hill, S. Mary, Middlesex; and Shepherd's Bush, S. Luke, in the parish of S. Stephen's, Hammersmith; Rebuilding the churches at Eglwsilan, near Pontypridd, Glamorgan; and Lincoln, S. Mark's. Enlarging or otherwise increasing the accommodation in the churches at Alverscot, near Faringdon, Oxon; Enmore, near Bridgewater, Somerset; Fishponds, near Bristol; Kilgwrrwg, near Chepstow, Monmouth; Keyworth, near Nottingham; Llanllowell, near Usk, Monmouth; Portbury, near Bristol; Snargate, near Folkestone, Kent; South Hill, Callington, Cornwall; and Wookey, near Wells, Somerset. Under urgent circumstances the grants formerly made towards enlarging and restoring the churches at Llanarth, near New Quay, Cardigan; Llangunider, near Crickhowell, Brecon; Meonstoke, near Bishop's Waltham, Hants; and Norwich, S. Michael-at-Thorn, were increased. Grants were also made from the School Church and Mission House Fund towards building mission churches at Bridge-street School, in the parish of S. David's, Carmarthen; Trevigra, in the parish of South Hill with Callington, Cornwall; and Tyler's Hill, in the parish of Chesham, Bucks. The society likewise accepted the trust of a sum of money as a repair fund for the Church of S. Matthew's, Duddleston, near Birmingham.

Gloucester Cathedral.—A special effort is being made to complete the choir restoration of Gloucester Cathedral in time for the triennial musical festival, in September next. Much of the basement has been prepared for the new tile flooring, and Mr. Godwin is now making the tiles. The pattern selected is that of some of the ancient tiles found in the cathedral. The decorations of the vaulting were completed some time ago by Messrs. Clayton and Bell; the canopies and stalls are being restored by Messrs. Farmer and Brindley, of London, and the fine clerestory windows on the north side have been filled with stained glass, while the west window has been chiefly restored with fragments of ancient glass found in the chapels of the crypt and elsewhere. Two other works of great interest have been finished, the restoration and decoration of the chapel of S. Philip, as a memorial to Sir C. W. Codrington, and the restoration, at the cost of the Earl of Ellenborough, of the chapel in the north transept. The work in the first is Norman in character, and is founded on fragments in Ely and Durham Cathedrals. The great window of the north transept is, we understand, to be filled with painted glass at the cost of Sir M. Hicks-Beach, M.P., as a memorial to the late Lady Beach. The subject will probably be the life of S. Paul, as that of the great window in the south transept depicts incidents in the life of St. Peter.

Harleston.—On Easter Tuesday the foundation-stone was laid of a new church for the town of Harleston, Norfolk. The design is by Mr. Phipson. It will consist of a nave 68ft. long by 20ft. 6in. wide, and 41ft. high to the ridge of the roof. On each side are four Decorated arches opening into aisles of similar length and 10ft. wide. These are lighted by three-light windows, and the nave has a clerestory of trefoil and quatrefoil lights enclosed in equilateral arches. The chancel is 30ft. long, and the same width as the nave, with an apsidal east end of five bays, with a single-light window in each bay. There will be room for about 400 persons. The contract amounts to £3,150, exclusive of pulpit, prayer desk, lectern, font, stained glass, screens, enclosing walls, gates, &c., and has been taken by Mr. Grimwood, of Weybread. The style is Geometrical Decorated.

Harrogate.—On Tuesday week, at Harrogate, the Bishop of Ripon opened the recently-erected church of All Saints, at Harlow-hill, Harrogate, The architects are Messrs. Shutt and Thompson, Harrogate and Leeds. The building itself is unostentatious, yet not without architectural pretensions; and is designed in the continental style of Gothic architecture. It contains nave, transept, chancel, organ chapel, and vestry. The roof is open-timbered, and the whole interior is effective and handsome. The exterior is bold in style, and free from much ornamentation. The tower is surmounted by a spire.

Hunningham.—On Wednesday week, Hunningham parish church was re-opened for divine service. The church, which is dedicated to S. Margaret, is of the thirteenth century style of architecture, and consisted of a nave, chancel, and small north aisle. It has a small wooden tower, in which are two bells. The architects were Messrs. Waller, of Gloucester, and the contractor was Mr. J. Marriott, of Leamington and Coventry. The new portion of the building, consisting of the north aisle, is of the Early English style, and the walls are built of native sand stone, with Bath stone dressings. The roof is of red deal, the rafters being varnished and open to view. Between the rafters is lath and plaster, and the roof is covered with Staffordshire brown tiles. The floor of the aisles is laid with Minton tiles, and filled with low-backed portable seats of red deal, varnished, and giving an additional accommodation for forty persons. The chancel has been newly roofed, and the roof over the body of the church has been thoroughly repaired.

Newport.—At Newport, South Wales, a new synagogue has been erected. The principal front forms a façade of Romanesque character, of which the centre comprises the entrance porch, lobbies, and stairs, the left wing being the minister's house, and the right wing the synagogue. The exterior is of black rock limestone, having a rockwork face, with quoins, strings, reveals, and arches of gray brick, and Bath stone copings, corbels, and keystones. The interior is 60ft. from east to west, and 30ft. wide, and is divided into eight bays by the corbels and elliptical arch ribs of the roof and ceiling, which is of red pine, stained light oak colour, and varnished. The cost of the building, including all expenses, has been £1,023. The architect was Mr. Lawrence, Mr. Chack being the builder.

Pattishall Church.—The church of the Holy Cross, Pattishall, was re-opened by the Bishop of Peterborough on Thursday week. The old building was in a disgraceful state; still there were points of interest which it was desirable should not be lost, and under Messrs. E. F. Law and Sons, architects, of Northampton, its most interesting features have been preserved. At the east and west extremities of the north aisle, there is some long and short work which indicates the Early Saxon character of the church. Similar evidence is also to be discerned just by the pulpit, at the east end of the nave. The chancel arch is Early Norman. Two early arches of a Transitional character opened from the north side of the chancel into the sacristy, which is a modern structure. At the east end of the north aisle is an early arch of a like character to the chancel arch. There are also the remains of a jamb, in the north wall, of what formed a sort of north transept, and a corbel, indicating the springing of an arch forming a chapel on the north side. This is now opened into the church. There is an early Norman doorway towards the west end of the north aisle, but that has been stopped up for some time, and not being required for the purposes of the church, it was thought advisable to allow it to continue stopped up. The old gallery has been removed. The stonework throughout the church, internally, has been thoroughly scraped, cleaned, and restored. Nothing has been done to the roof, which remains simply with its smooth-plastered bricks. A foot-pace divides the nave from the chancel, and upon it stands a new oaken rood-screen. The sanctuary chancel is approached by two steps from the lower part of the chancel, and in these steps are fancy tiles fitting to the risers. The font is new, and of a very early character. The restoration has been carried out under the supervision of the architects by Mr. Shakeshaft, builder, of Ashton.

Walsall.—Last week the new church of S. Michael and All Saints, Caldmore, Walsall, was consecrated by the Bishop of the diocese. The style is Early English—the materials used being free stone with Bath stone dressings—but, at present, the nave and chancel only are complete. The internal dimensions of the nave are 80ft. long by 27ft wide, and of the chancel, 35ft. long by 22ft. wide, both being proportionately lofty. The arches of the nave spring from massive stone columns, and the spaces are for the present filled up with brickwork, which can easily be removed when circumstances justify the addition of the aisles. The clerestory is pierced with five double windows on each side, each being divided with a pillar of black marble, and a circular window occupies the centre of the wall above the porch. The cost of the work so far carried out will be about £2,500. The architect is Mr. Veale, and the builder Mr. Lovatt, both of Wolverhampton.

York Diocesan Church Building Society.—At a meeting of the Committee of this Society on Friday last, in the Vestry of York Minster, grants were made towards the following objects:—Extension of new church at Bridlington, £130; increase of accommodation at Beverley, £22; ditto at Selby, £26. Three grants of £150 each were made of new parsonages, two at Scarborough and one at Sheffield.

BUILDINGS.

A Hall for the Foresters.—On Wednesday week the Lord Mayor laid the foundation-stone of a hall which is about to be erected in Wilderness-row, Clerkenwell, for the accommodation of the members of the Ancient Order of Foresters in the London United District. The total height of the building, from footings to ridge, will be more than 70ft. The elevation is Mediæval in style, having a porch in Portland stone, with polished red granite columns from Aberdeen. The general facing of the building will be in yellow malms, the heads and sills of the windows being of box-ground Bath stone, with bands of red bricks running throughout at the level of the heads and sills, and with relieving arches over the window-heads of the same material. The cornices will have bold stone cantilevers, or consoles, carrying an iron eaves gutter; the whole is surmounted by a high-pitched slated roof, with decorated iron ridge railing surrounding the flat at the top, constructed as a skylight over the grand hall. The side elevation, 80ft. long, is rather more decorative in character. Series of stone mullioned windows, with carved caps, are introduced on the upper floor, sharply-pitched dormer projections on either side of the roof receiving louvres required for the ventilation of the hall. The construction of the roof and internal ceiling of the hall is rather peculiar; the tie-beams, principal rafters, queen posts, and ordinary rafters being of fir, while the struts are of cast iron, two wrought iron bolts, which cross each other diagonally, passing from head to foot of either queen post. All this, however, is concealed from view by a horizontal ceiling, consisting almost entirely of ground sheet glass, and intended to be fixed in panels (each about 9ft. 6in. by 8ft.) of light L and T iron, the bars dividing the separate squares to be arranged in varying and fancy patterns, diagonal and otherwise. When completed the interior will have a series of pilasters on either side, with moulded dado, bases, and enriched caps; and a series of arches above with decorations in the spandrels will carry a carved cornice of rather unusual depth. A gallery will also be provided, carried upon cast iron columns by light lattice wrought-iron girders, and protected in front by a light wrought lattice railing of the same material; over the principal staircase, which will be of Park Spring stone, there will be a domical light of wrought iron. The designs and plans were furnished by Mr. W. L. Gomme, of Wycombe House, Hammersmith, and Fareham, Hants; but differences having arisen between him and the committee, Messrs. George Lansdown and Pollard, of Warwick-court, Charing-cross, were appointed to superintend the execution of the works. The contract is being carried out by Mr. Henshaw, of Macclesfield-street, City-road, the contemplated outlay being about £8,000, exclusive of the cost of the freehold land (amounting to about £4,500).

A New Hospital for Wiltshire. — On Wednesday week the Marchioness of Ailesbury laid the foundation-stone of a new hospital which is to be erected on a pleasant site in Savernake Forest, rather more than a mile from the town of Marlborough. Some five years ago, a cottage hospital was opened near the site of the new building, the necessary expenses being defrayed by the Marquis and Marchioness of Ailesbury; and the movement proved so satisfactory and beneficial to the poor of the different parishes within the Marlborough district that it was determined to build a permanent and commodious hospital. The Rev. J. O. Stephens, vicar of Savernake, evinced much interest in the undertaking, which, indeed, may be said to have originated with him, his proposals being liberally seconded by the marquis and marchioness, who have contributed about £1,300 towards the cost of the new hospital, besides presenting the site. The architect is Mr. G. Gilbert Scott, and the contractor, Mr. Ellis Roberts, of Islington. The estimated cost is £3,000, towards which about £2,750 have been promised.

On Tuesday, the 12th April, a new Wesleyan Chapel was opened for divine worship, at Cœdygric, Monmouthshire, by the Rev. Petre M'Kenzie. The chapel was carried out from plans by and under the supervision of Mr. E. A. Lansdown, architect, Bristol, and Newport, Monmouthshire.

Leek and Moorlands Building Society.—The fourteenth annual meeting of the members was held on Friday, the 31st ult. The report of the directors stated that the receipts during the past year (including a balance of £101 18s. 4d. in the treasurer's hands at the commencement of the year) amounted to £38,646 5s., and the payments to £39,216 7s. 5d., leaving a balance due to the treasurers of £468 4s. 1d., showing a larger amount of business than had been transacted in any previous year. The affairs of the society were thoroughly investigated, and its assets and liabilities carefully valued in June last, when bonuses were allotted to the amount of £1,779 9s., realised during the two preceding years. The sum of £1,983 17s. 11d. had been paid away in bonuses during the past year alone, and the sum of £3,117 5s. was still standing to the credit of members for bonuses earned out of past profits. The total number of shares in force was 8,573, being an increase of 1,091 during the year.

Edinburgh Architectural Association.—The usual fortnightly meeting of this Association was held on Wednesday week. Mr. Robert Morham, jun., president, in the chair. After the ordinary business, and the election of two new members, Mr. W. G. Shiells read a paper upon "The Renaissance and the Revival." After briefly tracing the causes which led to the Renaissance and to the recent Gothic revival, Mr. Shiells said that during three centuries our architects had been expressing themselves in a dead language, and that consequently the art had not enlisted the sympathy of the unlearned. The Revivalists, again, were following a course similar to that which an author would do were he to adopt the language of Chaucer. This course, he thought, might probably lead to the development of a new style likely to be generally appreciated. He then threw out some hints as to the procedure he thought should be adopted by the profession in order to procure this result. Opinions were expressed by several of the members present, and the thanks of the meeting were awarded to Mr. Shiells for his instructive paper.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—S. & Co., S. W. & Son, J. T. & Son, Walter Campbell & Co., J. C. W., J. A. Son, & Co., G. T. R., W. S. T., C. H. B. H., L. & N., R. R., J. W., R. J. S., J. M'D., G. R., C. J. L.

H. Higgins.—Sketch returned.

W. G. G.—Sketch returned.

F. H. Hornblower.—Sketches received and returned.

Glasgow Mason.—Hardly the thing for discussion in the Building News. Ask some "practical operative builder" in Glasgow.

J. S.—Gwilt's "Encyclopædia of Architecture," published by Longman.

S. Mary-le-Wigford, Lincoln.—In the list of "Tenders" published in our impression of the 7th inst., it is stated that "Mr. Bayley," of Nottingham, is the architect employed to superintend the restorations at this church. Messrs. Robert Clarke & Son, of Nottingham, write to say that *they* are the architects concerned in the matter, and that there is no architect of the name of "Bayley" practising in Nottingham.

Correspondence.

◆

THE LAST FIRST.

To the Editor of the Building News.

Sir,—"An intelligent public cannot brook instruction." Such was one of the remarks made by the President of the Glasgow Institute of Architects on Good Friday last. It reads like a paradox. Yet every architect has been brought in contact with men who should have been content to occupy the position of learners, but who have arrogated to themselves the dogmatic tone of teachers. The taste of the cultured man, based on great principles, has been obliged to give way before the self-assertion and vulgar prejudice of an uncultured, purse-proud client. And yet this latter has been, very likely, in other respects an intelligent person.

Men walk through life without hearing the maddening ecstacy of a sky-lark, without listening to the story of creation as told them in the heavens at night, and without seeing majesty in the slow, changeful motion of the snow clouds. But the fault is theirs alone. It is very seldom an intelligent man lacks the power of receiving the lessons of all that is beautiful in him and about him. The reason that he does not receive them is that he does not recognise in the artist a preacher; or, if he does, his faith in all preachers is weakened by the fact that those of another kind too often make a text the peg on which to hang the banner of their learning, or, worse still, the tattered flag of an old-world dogma. If he accepted the artist as his teacher he would learn the lessons to be constantly learnt in all that is around him, and would consent to follow where now he leads, and leads so very inaccurately.

Let us see in what sense the artist—whatever his particular field may be, whether painting, sculpture, or architecture—is a preacher, how he attains to that office of masterhood, and what must be the position of the less-technically-cultured if the world is to progress in an art path. Our human nature is a twofold one—material and spiritual. The former is the stronger of the two. The truth of this is evidenced in the history of the Church in the desire, which has so often manifested itself, to realise the earthly lives of our Lord and of the saints. From such a desire sprung the pride of the Lombard in possessing a rusted nail, and that of the Venetian in being the custodian of a ghastly skeleton. As this link to earth is weakened, as the material nature is subdued, and the spiritual nature is cultivated, so will be the increase in national morality. This work of weakening on the one part, and strengthening on the other is attempted to be accomplished in many ways; and by those whose sermons are addressed through the eye it is sought to be accomplished (perhaps unconsciously by him who is forwarding the work) by appealing to the imagination, one of the most powerful means by which the teacher can reach the heart of the taught. To wield this instrument of imagination well, and so promote the elevation of the spiritual nature, requires that a man should undergo discipline and bondage, and his path, like the narrow path which has become a royal highway since the Divine trod therein, is a rough and thorny one, and the foot-prints are often stained with blood and dented with the sign of a cross. But from obedience and restraint there come masterhood and freedom, as from the chrysalis there springs a higher, lovelier, and brighter life. But the work of spiritual ascendancy, the people's elevation from ignorance and moral degradation, can only be attained by presumptuous men humbling themselves—truly a great ordeal—by their becoming like little children, willing to be taught by those who, through obedience, have learnt to lead.

We feel sure that this day of humiliation, the time when artists shall be recognised as preachers and their works shall be appreciated as unspoken sermons, is not far distant. Though their delicate and precious lace be torn by the rough hand of ignorance, or soiled with the warm touch of passion, let them go on weaving, knowing that soon its beautiful combinations and interlacings, its strange crossings of warp and woof, will be understood; and that when "an intelligent public" shall begin to take the lowermost seat, and when the master of the feast shall say to the artist "Friend, go up higher," it will be a suitable wedding garment. R.

TIN-LINED PIPES.

Sir,—Referring to the statement made by Mr. W. J. Rolfe, of Boston, U.S.. in a letter published by you on the 21st February, that the makers of this pipe (tin-lined pipe), are not understood to deny that "corrosion may take place in the pipes, but tell us that some of the pipes first put in the market was imperfectly made and the like" was doubtless applied to the manufacturers in the United States. We leave them to speak for themselves, but we, the makers of the piping in Great Britain, most emphatically deny that corrosion does or can take place in connection with ordinary service water, and have also to state that we brought the manufacture of our pipe to perfection before we put a pound of it in the market.

Our works have been in operation for about eighteen months, and in that time we have manufactured a large quantity of the piping to meet both the home and foreign demand, but have not received one complaint of any imperfection in our pipe, but on the contrary, daily receive expressions of satisfaction as to its conduct and adaptability for the purposes to which it has been applied. We may mention that specimens of our make will be open to the inspection of the scientific and general public in the International Exhibition which opens in the beginning of May next, among which specimens will be seen a whole coil, split open from end to end, as proof of the continuity of the tin-lining.

With reference to the remarks of Mr. Rolfe on joint-making of this pipe, we have to state that the mode we adopt is perfectly safe, and in all cases certain, an unbroken surface of tin being presented to the water from end to end of any line of pipes. Our own investigations, verified by the results of those made by men of undoubted scientific ability, disprove the allegations made that pure tin, such as the internal surface of our pipe presents, is corroded or appreciably affected in any way by ordinary service water.

Mr. Rolfe's letter implies that considerable attention is being given in America (as is also the case in this country) to the necessity of henceforth discarding the metal lead as a conduit for water or other liquids for dietetic purposes. The evidences obtained by chemists, and the conclusions deduced by medical men from the examples that come before them of the loss of health and life which is attributable to the use of lead pipes and cisterns, make this necessity absolute. A substitute for these is required, and we feel convinced it is provided in our manufacture, which, retaining the valuable physical qualities of lead, presents at the same time perfect freedom from danger.—We are, sir, yours, &c.,

Liverpool. Walker, Campbell, & Co.

Extract from a Report made by Edwin Lankester, M.D., F.R.S., on Walker, Campbell, & Co's Lead-encased Block Tin Pipes.

"I have recommended slate cisterns and gutta-percha tubes for the purpose." [Storage and transmission of water for dietetic purposes.] "I have now, however, no hesitation in saying that the lead-encased block-tin pipe and tin-plated sheet lead, manufactured by Messrs. Walker, Campbell, & Co., are superior to any other materials I have seen for pipes and cisterns.

"I have tested these pipes for several weeks with great care, and have exposed them to the action of various kinds of water; in no case have I discovered in the water the slightest trace of lead, tin, or any other mineral matter whatever. I have submitted the pipes to the action of distilled water, Thames water, water from artesian wells in London, and to water highly charged with organic matter; and in no case when these waters have been exposed to the usual reagents for detecting the presence of tin or lead has the slightest quantity of these metals been detected. I have, therefore, satisfaction in recommending the lead-encased block-tin pipes, not only as an admirable invention, and well adapted for supplying water in a pure condition, but as a means of rendering our water supply throughout the kingdom free from the dangerous lead-taint with which it is now so frequently affected." 29, Great Marlborough-street, London, 29 December, 1869.

AN ARCHITECTS' ASSISTANTS' UNION.

Sir,—It seems evident, from the constant complaints in your paper and others, that an almost universal discontent prevails among the architects' assistants of Great Britain. Permit me to suggest that, instead of farther occupying your columns and their own time with useless letters, they should endeavour to do something towards improving their present position. Among architects and all other employers of labour the invariable practice is to get all that can be obtained from their servants at the least possible cost, and to regard no interests but their own. Complaining to them or reasoning with them can be of no avail; they will never move except on compulsion; and it appears to me that the only remedy assistants have is to form themselves into a union, by which means they may protect themselves against employers, afford each other assistance in cases of misfortune, and prevent themselves from being robbed by unqualified clerks, who work for low salaries. It is a matter of wonder to me that the class which, on account of its being so scattered, most needs a union, should never yet have thought of one, or at least never have done anything towards its formation. Those who have not considered the matter may see the advantages of a union in the report of the "Engineers' and Millwrights' Union," which has just been published. I am, &c.

Leeds, April 16th, 1871. Semper Paratus.

["Semper Paratus" simply advocates a trade union of architects' assistants to get what they can by "compulsion."—Ed.]

VILLAGE IRRIGATION OF INDIA.

Sir,—It is wonderful how much Nature has done for India, and how little the Indian Government, since the days of Clive. It would be far better for India if those charged with the irrigation were to select a competent staff of agricultural engineers, to carry out the work, instead of fetching out theoretical clerks, from the office of some aged engineer, "father of his line," of Westminster, who never saw a water-table unless at Charing-cross.

Before any great scheme is attempted, every village in the roadless districts, where hundreds of people die annually of starvation, should have a tank for the storage of water during the rains of the monsoon, instead of allowing the useful element to run waste into the sea, and, therefore, serve no useful object.

In those isolated districts during the intense heat, there are few living things to be seen, the quiet shadows lie sleeping on the ruins of hills; but the stillness of the dreary solitude is broken by the murmuring of the ring-doves and the whirr of the antelope in his wild career.

Surely, irrigation is not such an abstruse science—it requires no grand arches with lofty piers, surmounted by the British lion; but simply drains cut to convey the water from an inexhaustible source over the thirsty land. The merit of a work consists more upon the amount of benefit it is the means of doing than upon the amount of money spent upon its construction.

In many parts of India the land is so fruitful that in some cases it is assessed at 35 rupees per beeghà, and 170 rupees have been paid for well irrigated sugar-cane and cholum fields.

Let India have an inexhaustible supply of water; let educated natives have a share in the administration of affairs; do away with the baneful commerce in patronage, and we shall hear less of the insalubrity of India, or of the laws of blood and climate, and the land of the high-caste Brahmin will no longer be the grave of the low barbarian of the West.—I am, &c., Pierse Arthur.

THE SHAFTESBURY COTTAGE HOSPITAL.

Sir,—In your lists of tenders for last week, I observed those relating to the above memorial hospital. The accepted tender amounts to £1431 11s. 0d., or nearly double the original amount fixed by the committee. It will be remembered that the instructions issued by the committee were for plans, &c. &c, ("Site plan, foundation plan, roof plan, &c.," and a proportionate number of elevations and sections), for a cottage hospital to cost £800. Forty-two designs were submitted, and, according to a reliable letter which a correspondent addressed to you at the time, the committee seemed to have chosen a design which, before it could be carried into execution, required to be remodelled, and the committee even withheld the £20 premium until the plans had been revised. I am quoting from your correspondent—indeed, according to his account (and I do not think he was contradicted) the committee seemed to have chosen a very crude design. Under these circumstances, I do not think it is too much to ask for some explanation of this. I cannot doubt that the committee, or their architect, will be willing to afford such. It would be some satisfaction to many who, like myself, took some pains and trouble in the matter, and sent in designs which could be executed for the amount named by the committee.

I know of another architect who sent in designs upon which the greatest care was bestowed, and of which some eminent medical men thought highly.—I am, &c. The Author of One Design.

Sir,—"Ignorance *was* bliss," to a certain extent, on the above matter until your last issue, and it may be "folly to be wise" now, seeing that the matter—competitors included—is "taken in and done for." One of the conditions of the above competition was, "cost not to exceed £800," and under the heading of "Tenders," last week, we have "Miles (accepted) £1,431 11s." These facts, I presume, speak for themselves, and somewhat loudly. No doubt there are extenuating circumstances, and that the matter will receive ample elucidation: "black's not so very black, nor white so very white," when viewed in the right light, but—the light's the thing.

I consider "L'Homme qui Rit," of February 3, 1871, was a bilious man, or one fast of the clutches of "the green-eyed monster," and still enjoy the same opinion, but with this thought, by way of addenda: he is "L'Homme qui Rit." We shall assuredly have him *write* again.—I am, &c., F.

COMPETITIONS.

Sir,—Your remarks in the Building News of last week, relative to the competition for the Town Hall for West Bromwich, indicate anything but a hopeful state of things for the many architects who have gone to the trouble and expense of responding to this competition.

The commissioners ought to be requested, in common justice, to call in professional aid, as intimated in their instructions, and thus emulate their Birmingham friends, unless they wish to incur the disgrace so richly deserved by another committee—I allude to Wednesbury Town Hall—in a similar competition not a hundred miles from West Bromwich.

As one of the competitors, and knowing the difficulties of the site—particularly with regard to lighting—I am convinced that a committee of non-professional men are quite incompetent to judge of the various arrangements that will be submitted to them.

"Bowles's Five Acres Charity Estate Competition," in this week's number, affords another instance of the disgraceful manner in which these competitions are managed.—I am, &c., A Competitor.

Sir,—"The cry is still they come;" the latest hails from Bradford, Yorkshire, of competition notoriety. With commendable county honesty the projectors of the proposed new church of St. John, Little Horton-lane, wind up their invitation, *à la benediction*, with the information that "It has been decided that no premium can be offered!" Here's a glorious opportunity for the gratuitous glimmering of some great light hitherto lying under a bushel! What next, and next?—I am &c., F.

BUILDERS v. ARCHITECTS AND CLIENTS.

Sir,—A free expression of opinion on the common or uncommon abuse quoted by "Surveyor" last week is a matter of some trifling difficulty when that opinion has to be based on an *ex parte* statement not altogether devoid of strong colour. The architect would be, to all intents and purposes, doing the correct thing in dividing the contractor's charges by six, provided that worthy had used the same figure as a multiplier in concocting his claim—and I could name a case in point where a much more extensive numeral was put to a similar abortive use. As for deductions, it is a well-known fact that there never are any!

Dry facts oft-times receive qualification, and even liquefaction, by the addition of aquosity from a deep and oft-quoted source, somewhat requisite before the case can realise the hope of careful consideration.—I am, &c., Surveyor No. 2.

ARCHITECTS' CHARGES,

Sir,—Wouldn't it be be advisable on the part of "An Ill-used Architect" to con your last week's report of the case "Phipps *v.* Robertson," and draw his own conclusions therefrom? The plaintiff was evidently ready and willing to do all that was required whenever it suited his clients to proceed, but he, in my mind very wisely, forebore pushing the full £5 per cent. claim, as he assuredly would have done had he adopted "F. R. I. B. A.'s" logic. In a case precisely similar to the one quoted by your correspondent the architect withheld a charge of £2 10s. per cent. upon the unfinished work—unsolicited. If he had received the full amount, what would have reimbursed him who might some day have to complete the work? Architects are not immortal.—I am, &c., F.

ANTIQUITY OF PIPES.

Sir,—Your correspondent "P. E. M." seems to doubt the age of the pipe found at Taunton, with the date 1561 inscribed on it. For his benefit I extract the following from the notice of Cawdor Castle, by Mr. Billings, in his "Baronial Antiquities of Scotland:"—"In one of the apartments of this new erecture is a carved stone chimney-piece, containing the family arms and several grotesque figures. . . . . One of these rude representations is that of a fox *smoking a tobacco pipe.* On the stone is engraved the date 1510, at which time that wing of the castle was erected. . . . . There can be no mistake as to the date, or the nature of the representation. The fox holds the 'fragrant tube' in his mouth exactly as it is held by its human admirers, and the instrument is such as may be seen every day by those who patronise the cutty pipe."

"P. E. M." should remember Sir Walter Raleigh did not invent smoking, and it is quite possible that some of our roving forefathers may have used the pipe, though without influence sufficient to introduce it as a habit, as Sir Walter Raleigh did. From a footnote I observe Mr. Billings' extract is from "Carruthers' Highland Handbook" (p. 154).—I am, &c.,

St. Mungo.

Intercommunication.

QUESTIONS.

[2196.]—**Fire-proof Construction.**—Could any reader favour me with a statement of comparative cost per square yard of fire-proof construction on (1st) Denuet's principle; (2nd) Fox and Barret's; (3rd) Philips'; and (4th) with beams and brick arches, for a clear span of 25′ 0″ in each case, and a length of 100′ 0″ feet? I think such a statement was given in the Building News some time ago; but I have unsuccessfully consulted the indices as to the matter.—C.

[2197.]—**Mounting Tracings.**—Will some fellow-reader kindly inform me of the best method of mounting tracings? Also, the materials used? I have tried several processes, but without obtaining a perfect article.—Alpha.

[2198.]—**Architectural Library.**—Can any of your readers kindly inform us whether there are any architectural circulating libraries to which provincials can have access, by paying carriage of books, &c.? If so, the address of one or more would oblige.—S. and S.

[2199.]—**Engineering Establishment, Chatham.**—Can any one inform me whether—and, if so, where, and at what price—I can obtain the series of engraved sheets consisting of a number of architectural details prepared at the Royal Engineering Establishment, Chatham? And, also, whether there is any text-book referring to them.—Dermod.

[2200.]—**Quantity of Water per Head.**—In preparing a reservoir for water to supply domestic and stable purposes in a country house containing, say, 30 persons, what number of gallons per day for each person should be reckoned? For the supply of a town, I believe twenty gallons per head per day is considered ample. Is this too much for a house supply?—Dermod.

[2201.]—**New Shoreham Church, Sussex.**—I shall be obliged if you or any reader will advise me how to act in the following matter? Being anxious to make sketches of New Shoreham Church, Sussex, I applied to the sexton for the keys, as a notice on the church door directs. He objected, saying his orders were to "give the keys to no one." However, upon my paying a gratuity he compromised the matter by locking me in the building. This advantage I am now denied, on the ground that the sum given was not large enough. I wrote to the vicar, fully explaining my object, and requesting permission to place a ladder against the exterior walls, in order to obtain dimensions of the east front and flying buttresses, and received a very brief, uncourteous reply, refusing me altogether, without the slightest reason being assigned. I have called on the vicar since, but he declines to see me. Is he justified in acting thus, thereby treating the parish church as private property?—A Young Architect.

[2202.]—**Wood Lice.**—I shall be obliged if some one will kindly inform me how to rid my house of wood lice, as they are most destructive.—Domestic.

[2203.]—**Measurement of Glass.**—Plate glass, I am told, is correctly measured on the longest line. Is it so? Should stained glass be measured nett, or in a similar manner? And should the window be measured as it stands, or should each piece of glass be treated distinctly? When a price per foot is given, the method of arriving at the superficial contents is left to custom, and custom is a weathercock.—S. S.

[2204.]—**Price of Excavation.**—If a contractor gives a uniform price per cubic yard for excavation, some of which, he is informed, will be 10ft. deep, and, in squaring up, claims an extra price per yard for that beyond 6ft. in depth, is he entitled to consideration as a sane person?—S. S.

[2205.]—**Rolled Girder.**—Will "Check" (2168) kindly calculate the breaking weights of a wrought-iron girder of the same span and section as before, as his calculations were made for a cast-iron girder, although the question said "rolled girder?"—Rolled Girder.

[2206.]—**Cleaning Wall Paper.**—Can any one tell me of a speedy and certain means of taking out oil, accidentally or otherwise, got into wall paper, which is upon the walls? Answers will oblige.—Ego.

REPLIES.

[2188.]—**Measuring Cement.**—"A Subscriber" will find one bushel of cement will cover 1 and 1-7th square yard 1in. thick; 1½ square yard ¾in. thick; 2¼ square yards ½in. thick. 1 of cement to 2 of sand will cover 3¾ square yards, 4½ square yards, and 6¾ square yards according to thickness.—R. A. C.

[2190.]—**Wells.**—The "simplest and cheapest method of forming a well" is to dig out the ground and line the sides with brickwork, set upon wooden (elm) curbs. The ground having been dug out to a depth of about 8ft., but more or less according to the nature of the ground, a curb is laid down, consisting of segments of a circle, whose internal diameter is that of the intended well, and whose external diameter is that which will allow the brickwork to be built upon it, whether 4½in. for a small well, or 9in. for a larger one. Then, when the lining has been built up to the surface, the further progress downwards may be made by either of two methods—viz., pressing down the ring of brickwork as the excavation proceeds underneath it, by means of weights, such as pig iron, or by excavating the ground underneath the curb for a part only of the circumference, and under-pinning the curb with brickwork, in sections of about 3ft. in width, progressively, until the whole circle is completed. This is supposing a permanent supply is desired. Norton's tube-well is very useful for an army on the march, or for a temporary supply anywhere; but, for a permanent one it is a very inferior contrivance to a proper well. It is necessary, in order to procure a pure supply of water, to keep out the surface water, and this is best done by building the brickwork in cement, and flushing up every joint solidly. Ground blue lias lime, if fresh, may be used instead of cement, and is cheaper; but every care should be used to fill every joint with cement or mortar, so as to keep out of the well the soakage from the surface, which is always impure, and that is easily done by careful workmen.—C. S.

[2193.]—**Problem.**—I must first point out an error in the data supplied, either typographical or other. It should be L cot not L cos 17° 21′ 15″ = 10·5051500. The ordinary trigonometrical formula for the solution of a triangle, having given two sides (a, b), and the included angle (c) is—

$$\text{L}\tan\frac{1}{2}(\text{A}-\text{B}) = \log(a-b) - \log(a+b) + \text{L}\cot\frac{\text{C}}{2}$$

This formula determines $\frac{\text{A}-\text{B}}{2}$ & $\frac{\text{A}+\text{B}}{2}$ is known since it is $90^\circ - \frac{\text{C}}{2}$ thus A and B can be found. In the present case $a - b = 210 - 110 = 100$

$a + b = 210 + 110 = 320 = 10 \times 2$

∴ substituting in above formula, we get—

$$\begin{aligned}\text{L}\tan\frac{1}{2}(\text{A}-\text{B}) &= \log 100 - \log 10 - 5\log 2 + \text{L}\cot\frac{\text{C}}{2}\\ &= 2 - 1 - 1{\cdot}5051500 + 10{\cdot}5051500\\ &= 10\end{aligned}$$

$\therefore \frac{\text{A}-\text{B}}{2} = 45^\circ$ since this is the only admissible value.

$\frac{\text{A}+\text{B}}{2} = 90^\circ - 17^\circ\,21'\,15'' = 72^\circ\,38'\,45''$

i. e., $\text{A} - \text{B} = 90$ & $\text{A} + \text{B} = 145^\circ\,17'\,30''$ from which $2 = ns$ we get, at once $\text{A} = 117^\circ\,38'\,45''$

$\text{B} = 27^\circ\,38'\,45''$

I shall be happy to give any further explanation if required.—T. H. E.

STAINED GLASS.

Diddlebury.—A stained glass window has been erected in Diddlebury church, Salop. The window consists of two openings, with a subject in each, viz., "The Descent from the Cross" in the left hand, and "The Entombment" in the right, with an emblem in the tracery, surrounded with rich background and border. Messrs. Done and Davies, of Shrewsbury, were the artists.

London Institution, Finsbury Circus.—At a *conversazione* held at the London Institution on Wednesday week, Mr. Charles Baily offered some observations on glass paintings which still exist in the Church of Holy Trinity, at Long Melford, Suffolk. The history and peculiar characteristics of the windows, *fac similes* of which were exhibited on the walls and tables of the library, were dwelt upon with brevity and clearness by Mr. Baily.

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A Birmingham gentleman, desirous of promoting the intellectual culture and enjoyment of the inhabitants, has given £3,000 as the nucleus of a fund for investment for the purchase of pictures to be publicly exhibited in Birmingham.

The New Forest.—Sir Harry Verney asked the Secretary to the Treasury on Tuesday whether the report was true that within the last five years a great quantity of the finest beech and oak trees in the New Forest had been cut down, and that much of the wood had been sold for firewood; and whether the Government would take measures to prevent any further destruction of the timber in the forest until the question had been discussed in Parliament.—Mr. Baxter, in reply, said that it was true that to a certain extent some timber had been cut down within the last few years, together with some underwood, but all the ornamental timber had been left standing, and none but small branches had been sold for firewood.

LEGAL INTELLIGENCE.

Re Thomas Quinn, Builder.—Last week a meeting of the creditors of Thomas Quinn, a builder, carrying on extensive business at Kennington-park, Forest-hill, and Hammersmith, and who also traded as a merchant at No. 32, Great S. Helens, under the style or firm of Quinn and Co., was held at the Guildhall Tavern, for the purpose of considering an offer which the debtor had made of paying a composition of 5s. in the pound by two equal instalments of three and six months, the last instalment secured by the guarantee of a creditor and the bankrupt's acceptances. The trustee under the bankruptcy was called to the chair, and after considerable discussion it was resolved to accept the proposal on payment of costs, and upon the arrangement being carried out the bankruptcy will be forthwith annulled.

Court of Bankruptcy, April 13. — Re Frederick Hailey.—(Before Mr. Registrar Pepys.) —This bankrupt, who was a builder, carrying on business in the Lady Somerset-road, Kentish Town, had filed a petition for liquidation, owing debts of about £4,000, and the time for registration of the resolutions had been extended by the Court until the 15th March, with a view to obtaining the concurrence of various non-assenting creditors.—Mr. S. Tilley, the solicitor for the proceedings, applied for an order to register the resolutions to which the necessary assents had now been obtained. His Honour, upon the ground that the time allowed for registration had expired, declined to grant the application.—Mr. Parker, the debtor's solicitor, afterwards attended, and stated that he had been unfortunately detained. He was prepared with evidence to account for the delay.—His Honour said that point might be mentioned again on affidavit, but he could not hold out any hope that the application would succeed.

Infringement of the Building Act.—Mr. Thomas Dudley, architect, Pall-mall, was summoned at Marlborough-street, on the 12th inst., by the Board of Works and Vestry of S. George's, for an infringement of the Metropolitan Local Management Act, by erecting a structure in front of the premises of the Co-operative Supply Association, Albert-terrace, Brompton.—Mr. Besley said the erection complained of was a covered way of glass and iron projecting from the premises of the Supply Association and beyond the general line of buildings.—Mr. Arntz, surveyor, considered that this covered way resting on iron pillars was a structure within the meaning of the act.—Two other surveyors gave similar evidence.—Mr. Poland, for the defence, said these proceedings could have no public object; he rather suspected they orginated in jealousy occasioned by the establishment of a successful undertaking. He contended that the erection complained of was neither a building, an erection, nor a structure, within the meaning of the Act. The erection was nothing more than a covered way on the private property of the company, put up for the convenience of customers. It was no part of the premises; it was a kind of covering, erected on posts easily removable, and fastened to the house by means of sockets, which also could be taken away immediately. If these kind of coverings were pronounced illegal, then every shopkeeper who put up posts in the streets as supports to his sunshades was guilty of an infringement of the Act and liable to its penalties. There was no pretence for saying that this was an erection such as to bring it within the meaning of the Act, and he relied on previous judgments and on the merits of the case for a verdict in his favour. He had another objection against the form of the summons, the complainant having summoned the architect instead of the Co-operative Supply Association. He would make one other remark. Before the Association altered the premises at a large expense, and put up the covered way to keep the rain from customers, the erection not extending beyond the common line of buildings, the cost of which was upwards of £90, there was an ugly tarpaulin in the same situation put up by a velocipede maker who then tenanted the shop, and this was never interfered with.—Mr. Tyrwhitt took time to consider his judgment.

Terrey v. Clark.—A Verbal Agreement.— In this case (heard recently at the Clerkenwell County Court, before Gordon Whitbread, Esq., judge), the plaintiff was a builder, of Clerkenwell, and the defendants were Messrs. Clark and Co., shutter manufacturers, of Rathbone-place, Oxford-street. The action was brought to recover £8 5s., for work done. Defendants paid £6 15s. into court. Mr. Boydell, solicitor, appeared for the defendants, and plaintiff conducted his own case. It appeared from the statement made by Mr. Boydell that about the beginning of this year plaintiff was written to to construct a melting furnace for defendants. He was shown one defendants had, and told it did not answer in consequence of its being open at the top, whereupon plaintiff described how he should build the new one, with a dome or covering, so as to retain the heat, and he guaranteed that it would get a heat sufficient to boil lead, the purpose it was intended for. Grafton, the defendants' manager, gave the order, and asked what the cost would be, and was told by plaintiff it would be £5. He was then ordered to proceed with the work at once. Grafton told the plaintiff that any information he required respecting the flues, &c., would be given by the foreman, Mackenzie. The plaintiff completed the furnace, but it did not answer. The plaintiff was requested to make some alterations, which he did, and charged moderately for them; but what defendants objected to pay was the sum of £1 10s. for building a dome when it was clearly understood before the order was given that a dome was to be erected, as the size of the aperture was actually discussed. The furnace was an exact counterpart of a kitchen or wash-house copper, with the addition of a plaster top. Plaintiff had been offered £6 15s., which he refused to accept. Plaintiff denied that any agreement was come to about a dome, and called his bricklayer, who swore that plaintiff, in giving him instructions, never mentioned anything about a dome, and said it was a suggestion made by defendants' manager afterwards, when it was found that sufficient heat could not be obtained by the furnace as erected. Plaintiff never agreed to erect a dome in the agreement for £5. His Honour said it was pity the agreement was a verbal one. He was sorry to have to decide against plaintiff, because he felt that he did not understand that a dome was to be included; but in the teeth of the evidence given for the defence, which clearly showed the defendants understood it to be included, he could do nothing else. He was much struck with the straightforward way in which the plaintiff had given his evidence, but he must decide against him, with costs.

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WATER SUPPLY AND SANITARY MATTERS.

Marylebone.—The Vestry of the parish of S. Marylebone have resolved to demolish some houses in Stephen-court, under the provisions of the Artisans' and Labourers' Dwellings Act. Dr. Whitmore, the Medical Officer of Health, has also reported as unfit for human habitation some houses in S. James's-place, Notting-hill, but these the surveyor has reported to be "capable of repair."

A New Deodoriser.—Dr. Vœlcker, the distinguished agricultural chemist, calls attention to the use of spongy iron as a deodorising material of greater potency than animal charcoal. Sewage water passed through a filter of this substance is completely purified, and this filtered water, after having been kept six months protected from the air, was perfectly sweet, and free from any fungus growth. The spongy iron is obtained by calcining a finely-divided ore to charcoal. Mr. Spencer, whose name is connected with the discovery of the electrotype, has for some time been advocating the use of a filter of this description. Its power of rendering water beautifully transparent, and apparently free from all organic matter, is its strong recommendation.

Sewage Utilisation.—On this subject, Mr. J. J. Mechi, of Tiptree Hall, Essex, the well-known agriculturist, gives his opinion as follows: "The most perfect and practical instance I know of the utilisation of town sewage is, in my opinion, that on Mr. Hope's Breton's Farm, near Romford, Essex. The luxuriant and rapid growth of the numerous and varied productions afford unmistakeable evidence of the food-producing powers of town sewage. Mr. Hope pays 2s. per head per annum of the population of the town of Romford who use the sewers. The town conveys the sewage to Mr. Hope's farm, and there raises it 20ft.; all the rest is done at Mr. Hope's cost. Mr. Hope's successful practice confirms my own decided conviction that the sewage should pass direct from the town to the farm, and that settling tanks, deodorisers, &c., are a costly mistake." [A full description of the method of utilising sewage adopted by Mr. Hope will be found in a recent volume of the Building News.]

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MEETINGS FOR THE ENSUING WEEK.

Monday. *Institution of Surveyors.* 8 p.m.

Tuesday. *Institution of Civil Engineers.* "Further Experiments on the Strength of Portland Cement." By Mr. John Grant, M. Inst., C.E. 8 p.m.

Wednesday. *Society of Arts.* "Photography in the Printing Press, being a Description of the Working of the Heliotype Process." By Mr. Ernest Edwards, B.A. 8 p.m.

Thursday. *Society for the Encouragement of the Fine Arts.* "The Influence of Cheap Prints on Public Morals." (Illustrated.) By Mr. W. G. Larkins. 8 p.m.

Saturday. *Associated Arts' Institute.* "On Some Characteristics of the Venetian School of Painting." By Mr. William Davies. 8 p.m.

Museum of Practical Geology, Jermyn-street. St. James's. Swiney Lectures on Geology. Lecture VIII. by Dr. Cobbold, F.R.S. 8 p.m.

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A proposal made by Captain Mercier on behalf of the Cabmen's Shelter and Public Lavatories Association, for permission to erect a shelter and lavatory on the Knightsbridge cabstand, was considered on Friday last by the Westminster District Board of Works, and was favourably received. The object was referred to the Works Committee for their report.

Our Office Table.

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The Val de Travers Asphalte.—At a meeting of the City Commissioners of Sewers on Tuesday last, Mr. J. T. Bedford, a member of the Streets' Committee, stated that the asphalte laid down in the roadway of Cheapside had just been subjected to a severe test, which it had stood most satisfactorily. A lorry and a large block of granite, weighing together 23 tons, had passed over the road without making the slightest indentation.

The Great Pyramid.—"A Note on the Antechamber of the Great Pyramid," by Captain Tracey, R.A., was read by Mr. St. John Vincent Day, before the Scottish Royal Society on Monday. The paper contained a great variety of measurements and calculations, designed apparently to bear out in some respects the theory lately broached by Professor Piazzi Smyth in reference to the Great Pyramid. Readers interested in the subject will do well to consult the recent numbers of the *English Mechanic and World of Science*, where the matter has been fully discussed.

The Darien Canal.—Encouraging intelligence is again received from the Darien Canal Surveying Expedition. The latest reports state that the Atrato and Tuyra rivers route has been demonstrated to be perfectly practicable for a canal route. The distance from ocean to ocean is 125 miles, 75 miles being through navigable waters. Fifty miles of canal are to be constructed, 30 miles being along a level surface. In the remaining 20 miles the highest elevation is reported at not over 150ft., and Captain Selfridge hopes to find a point in the dividing ridge as low as 75 or 100ft. elevation. The cost of the canal over this route is roughly estimated at 130,000,000 dollars.

The Reputed Works of Count D'Orsay.— At a *conversazione*, held at the London Institution, Finsbury-circus, on Wednesday week, Mr. Draper described some drawings by the late Mr. Nicholson, who was in the employment of Count D'Orsay at Gore House, Kensington, some twenty-five years ago. The count at that time was in some repute as a painter and sculptor, but Mr. Draper expressed his belief to be that none of the works which came out under the count's name, and which made so great a reputation for him, were actually designed, modelled, or in any material degree superintended by him, and that a great deal of credit attributed to the count was due to Mr. Nicholson.

Engineering and Oysters in the Tropics.— Natural phenomena must be regarded by the engineer in the tropics. Oysters (says *Nature*) are a newly recorded enemy to the engineer. Some gourmand suggested the harbour of Tuticorin as a suitable place for oyster-beds, and the Madras Government, doubtless appreciative of the value of oysters, either for eating or for pearls, turned a deaf ear to remonstrance. Time has, however, justified the remonstrants, for though the projectors have got an abundant supply of oysters, the harbour of Tuticorin is now said to be in danger of total destruction by the growth of the oyster-beds, and the attention of the Government is seriously directed to cross the love of the oysters. The Madras coast is so ill-provided that harbours are more valuable than oysters, and a campaign will be directed against the latter.

The Carriage-Way through S. James's-park.—Mr. Ayrton, says the London correspondent of the *Birmingham Daily Post*, has made a very grievous mistake in yielding to the aristocratic pressure put upon him to permit carriage traffic through the east end of S. James's-park. Crossing the parade yesterday at the back of the Horse Guards, I was amazed to find it intersected with a line of brick rubbish, intended to serve as the foundation for the new road from Marlborough House to Storey's Gate. It is simply destructive of that portion of the park, and turns the whole of it into a mere oasis between streets, something little better than an ordinary London square. All this Vandalism, all this waste of public money, is perpetrated, not for the sake of the people, but for the sake of a few wealthy idlers, who want to get from their clubs to Westminster without going through Whitehall. The time saved cannot be more than two minutes at the outside. It is perfectly scandalous that the House of Commons should have allowed such an open job. The people, mark you, are not to use the road. Nothing less than a cab is to be allowed to pass. There are hundreds of tradespeople in Piccadilly and hundreds of costermongers in Westminster, whose time is more precious than that of the average member of Parliament; but they are to be excluded. They are to pay the taxes with which the road is to be made, and their children may, if they please, get run over on it, but beyond that they have nothing to do with it.

HYDE PARK.—A correspondent in the *Times*, in reference to the present condition of this park, says:—"The paths across in dry weather are so covered with a sharp gritty gravel that few persons use them. The walkers of all classes seek the paths formed on each side, which are free from grit, and have only a smooth foundation of soil. The consequence is that, along some of the principal paths, the turf is trodden away on each side for a space of from ten to thirty yards. This ungrassed desert extends more and more every month. On some spots large spaces are entirely bare of grass, and in dry weather are covered with dust. Even in those parts of the Park where there are no paths the grass has died away over large patches, and no attempt is made to replough, or manure or sow them; and even where they have tried to sow the sides of some of the paths they have not railed in the part which was sown, so that the newly-springing grass has all been killed down before it was fairly grown. Anything more untidy, more neglected, or more wretched than some parts of this splendid property it would be difficult to find. And then, to show how little the managers care for its appearance: they have only just cut the turf off acres of the most beautiful parts of the Park, and have left the barren and unsightly ground without a blade of grass. This is done in order to cover the ornamental parts near the drives with the turf which is taken off, as if we could not afford to buy turf from the country. In this way the beauty of the Park near the Bayswater-road, and within sight of the houses along that road, is quite destroyed. All this appears all the worse when you hear in mind the enormous value of the land itself and the great care and taste which are being expended by our provincial towns upon their parks, which have not one-hundredth part of the value of Hyde Park. Even in Kensington Gardens the state of the paths and of their edges is disgraceful. I write now merely to draw attention to a state of things which is the daily subject of the comment of thousands."

Chips.

It has been resolved by the Clerkenwell Vestry to pave Exmouth-street, Clerkenwell, with the Val de Travers asphalte.

The Baptists of Great Yarmouth have just erected a commodious chapel, situate on the Wellesley-road, Northbeach. It was opened on Good Friday.

Four unoccupied houses in Union-street, Torquay, were on Friday week crushed by the fall of a huge piece of rock, supposed to have been loosened by blasting operations in the vicinity.

The foundation-stone of a new Sunday school in connection with the Wesleyan Chapel, S. George's, Shropshire, was laid on Good Friday.

It is proposed to restore the church of S. Luke, Lower Norwood, at an estimated cost of £3,400.

The New Townhall at Poplar will be opened on Thursday next.

It is proposed to rebuild Exe Bridge, at Exeter, at a cost of £2,000.

It is proposed to erect five Established churches in Dundee, at a cost of £10,000.

The London Street Tramways (Extension) Bill was read a second time in the House of Commons on Monday evening last.

The report of the Select Committee of the Metropolitan Board of Works' Leicester-square Improvement and Shoreditch Improvement Bills, was printed on Tuesday last.

The waterworks tunnel of Buffalo has been extended 60ft. into the lake. The tunnel is to be 9ft. in diameter, and more than 700ft. long.

The boring of the Hoosac tunnel, in America, five miles in length, is steadily progressing. It is expected that the work will be completed in 1874, as promised by the contractors.

In Paris there has been a meeting of artists, with Citizen Courbet, appointed by the Commune, for chairman. It was resolved almost unanimously that the Column of Victory, in the Place Vendôme, and the Arc de Triomphe, ordered to be pulled down by the Commune, were artistic monuments which should be preserved.

The Paddington Vestry at their meeting on Tuesday last approved of the report of their Public Health Committee, which condemned the principle of a constant water supply for the metropolis.

The Rev. Beale Poste, LL.B., well known as a Kentish archæologist, died at his residence, near Maidstono, on Saturday morning last. The deceased was born in 1793.

PERSONAL.

Mr. Edward Collinson, the representative of the parish of S. George's, Southwark, at the Metropolitan Board of Works, has resigned that post. The Vestry have appointed Mr. Redman as his successor in that office.

Mr. Henry Edwards, M.P., is about to build, at his own cost, a working men's club for Weymouth and Melcombe Regis.

Mr. David Nicholls has obtained the contract for the erection of a new bridge at Leeds, at a cost of £15,319.

The Taylor prize of fifty guineas offered through the Statistical Society for the best essay on local taxation, has been awarded to Mr. Robert H. Inglis Palgrave, third son of the late Sir Francis Palgrave.

Mr. F. H. Fowler, architect, of Fleet-street, has been elected a member of the vestry of S. Dunstan's-in-the-West.

On Friday last, as Mr. Henry Grant, a master mason, of Forest-hill, was passing along near the London Bridge Railway Station, he fell upon the flagstones, and expired in a few minutes from apoplexy.

Mr. Guildford L. Molesworth has resigned the office of Inspector-General of Public Works in Ceylon, to accept the more lucrative, but not less responsible, post of Consulting Enginneer for the State Railways of India.

Peter von Hess, a German historical painter, died at Munich an the 4th inst. He was born at Dusseldorn in 1793.

Sir W. Tite, M.P., F.R.I.B.A., has, we are glad to say, so far recovered his health that he hopes at once to resume his Parliamentary duties.

Mr. E. J. Poynter, A.R.A., is likely to be nominated Slade Professor of the Fine Arts at the London University.

Timber Trade Review.

PRICES, April 18.—Timber per load:—Riga, £3 5s. to £3 7s.; Dantzig and Memel brown, £4 to £4 10s.; ditto best middling, £3 10s. to £4; ditto good middling and seconds, £3 2s. to £3 7s.; ditto common middling, £2 12s. to £2 17s,; ditto undersized, £2 12s. to £3; ditto small, short and irregular, £2 5s. to £2 15s.; Stettin, £2 13s. to £3; Swedish, £2 11s. to £2 15s.; ditto small, £2 5s. to £2 10s.; Quebec red pine spars, £3 15s. to £4 15s.; ditto mixed and building sizes, £2 15s. to £3 5s.; ditto large yellow pine, £4 5s. to £5 5s.; S. John's and board yellow pine, £3 15s. to £4 10s.; ditto building sizes, £3 5s. to £3 15s.; pitch pine, £3 5s. to £3 15s.; Quebec oak, £6 to £6 5s.; United States oak, £4 to £5; rock elm, £4 to £4 10s.; ash, £3 10s. to £4 10s.

Deals, &c., per Petersburg standard:—Archangel yellow, £12 10s. to £14 10s.; Petersburg yellow, £13 to £13 10s.; Wyburg yellow, £9 15s. to £10 10s.; Swedish and Finland hand-sawn, £7 to £8; Petersburg and Riga white, £10 to £12 10s.; Gothenburg mixed yellow, £10 to £10 10s.; Quebec first floated yellow pine, £16 19s. to £18; ditto first bright, £18 to £19 10s.; ditto second floated, £12 10s. to £13; ditto second bright, £13 5s. to £14s.; ditto third floated, £8 10s. to £9 10s.; ditto third bright, £8 15s. to £9 10s.; Quebec first spruce, £9 10s. to £11; ditto second, £8 19s. to £9; ditto third, £7 15s. to £8 5s.; Gefle and best Swedish yellow, £10 10s. to £12 10s.; ditto Battens, £8 10s. to £9 10s.

Trade News.

WAGES MOVEMENT.

BARROW-IN-FURNESS.—The boiler makers of Barrow-in-Furness are on strike for an advance of sixpence per day.

NEWCASTLE-ON-TYNE.—It is feared, says the *Northern Echo*, that the joiners employed by the Corporation of Newcastle-on-Tyne, who were never affected by former disputes in the trade, will have to turn out with the men on strike in the other branches.

TENDERS.

ASHFORD.—For an addition to Crown Field House, Bethersden, near Ashford, Kent. Messrs. Tolley & Dale, architects:—

Lee & Padgham	£887
Bridge & Bourne	775
Fowler (accepted)	734

BASINGSTOKE.—For water-works. Messrs. Russ & Minns, engineers:—

Contract No. 1.—Pipes.

Begg	£1409	16	0
Head (Howard)	1368	15	0
Wallis & Stevens	1312	4	2
Spittle	1270	11	9
Hodges & Co.	1256	0	0
Hobbs	1250	0	0
Gielgud	1242	16	10
Whitmore & Co.	1230	0	0
Firmstone & Co.	1222	0	0
Cameron & Robertson	1208	10	0
Clay Cross Co.	1200	0	0
Laidlaw & Co.	1195	0	0
Cochrane & Co.	1188	0	0
Bailey, Pegg, & Co.	1176	7	0
Horsley & Co.	1170	0	0
Tomlinson	1168	0	0
Jordan	1161	7	0
Marshall	1150	0	0
Lawrie	1149	7	0
Sibsey	1060	17	3

Contract No. 2.—Pipe Laying.

Furness	£940	0	0
Sibsey	931	0	0
Beck & Co.	854	0	0
Crump	797	0	0
Baker & Son	762	10	5
Painter	728	0	0
Marshall	664	0	0
Bugbird	620	0	0
Tomlinson	610	0	0
Chandler	605	10	5
Stevens	510	10	0
Blankeborough	574	15	0
Slade	534	0	0

Contract No 3.—Reservoir.

Tomlinson	£454
Furness	440
Slade	376
Marshall	375
Jennings	373
Bugbird	365
Batten	365
Sibsey	344

BOW.—For the construction of tanks, and other works at the sewage pumping works of the West Ham Local Board of Health, adjoining the river Lea, Canning Town, Bow Creek:—

Jackson	£7200
Rivett	6275
Wigmore	5950
Marshall	5730
Harris (accepted)	5597

CITY.—For rebuilding Nos. 155 & 156, Aldersgate-street, for Messrs. M. & N. Salaman. Mr. B. Tabberer, architect:—

Little	£2198
Sewell & Son	2144
Rider & Son	2120
G. Pritchard	2085
Mark	2039
Perry Bros.	2037
Palmer & Son	2035
Cohen	2020
Mrs. Jane Pritchard	1997
Merritt & Ashby	1995
Browne & Robinson	1980
Henshaw (accepted)	1955

CITY.—For converting the Welsh Chapel, Aldersgate-street, into a warehouse, for Mr. Clark. Mr. Wimble, architect:—

Fairhall & Co.	£1480
Easton, Bros.	1478
Ramsey	1434
Killby	1342
Hart	1290
Scrivener & White	1239
Newmann & Mann	1235
Morter	1169

HARROW.—For the construction of roads and drainage works on the Greenhill estate. for the United Land Company:—

Pearson	£3575	0	0
Wigmore	3149	10	0
Pizzey	2577	0	0
Vickers & Crane (accepted)	2449	0	0

HESSLE, NEAR HULL.—For the erection of house, stables, offices, &c., for R. Ash, Esq., at West-hill. Mr. R. G. Smith, Architect.

Clarke & Son	£3393	0	0
Blakeston	3320	0	0
Redfearn	3315	0	0
Clarkson	3290	0	0
Barritt	3228	17	6
Jackson	3170	0	0
Musgrave & Son	3150	0	0
Foster	3081	2	0

HIGHBURY.—For works at Highbury for the British Land Company (Limited):—

Blackmore	£6,826
James Pizzey	6656
John Capper	6599
William Crockett	6500
Phillip Stiff	6500
G. W. Cole	6320
Wainwright & Wilson	5900
Anderson & Dunmore	5760
Joseph Brown	5640
W. T. Jones	5604
Bloomfield & Morris	5500
T. Williamson	5490
James Hare	5425
Joseph J. Haynes	5300
William Wigmore	5150
William Riley	4500
Thomas Pearson (accepted)	4444

LONDON.—For repairs to house at Herne-hill for Mr. Taber. Mr. W. H. Powell, architect:—

Smith	£313	0	0
Cowtan & Mannooch	172	17	6

NEWPORT, MON.—For alterations, &c., to Nos. 1 and 2, Baneswell-road, to form shops for Mr. Joseph Simmonds. Messrs. Lawrence & Goodman, architects. Quantities supplied:—

J. Linton	£193
W. J. Baker	182
H. Richards	180
W. Banfield	176
W. Biggs	175
D. Prosser	175
G. Jones	163
J. Whitaker	152
Miles & Son	137
E. Phillips (accepted)	128

Newport, Mon.—For a pair of villas on the Caerau estate, for Mr. J. Davies. Messrs. Lawrence & Goodman, architects. Quantities supplied:—

W. Hazel	£1740	0	0
J. Whitaker	1586	0	0
W. Jones	1556	0	0
J. Linton	1429	0	0
G. Jones	1420	0	0
H. Richards	1415	10	0
J. W. Chack (accepted with deductions)	1400	0	0

Paddington.—For the erection of stables, &c., and a dwelling-house, for London General Omnibus Company, under the superintendence of Mr. Tosh. Quantities supplied by Mr. A. J. Bolton:—

Wicks, Baug, & Co.	£3596
Moore	3418
Eaton & Chapman	3366
Coleman	3300
Hill & Keddell	3294
Williams & Son	3285
Bowman	3117
Mann	3087
Ford	3052
Bledge	2933
Goodman	2884
Atchinson & Walker (accepted)	2825

Mr. Tosh's estimate, £2873.

Penge.—For baker's premises. Messrs. Spalding & Knight, architects, 1, Bloomsbury-place, W.C.

Basham, Bros.	£1217
Stephenson	1147
Dover	1099
Peskett & Taylor	1075
Nightingale	1074
Crossley	1059
Capps & Ritso	1053
Scrivener & White	1028
Hollidge	990
Watson, Bros.	985
W. & F. Croaker	965
Hughesdon	925

Streatham.—For finishing two houses at Streatham for Mrs. Mulloy. Messrs. Dean, Son, & Taylor, surveyors, 5, Mark-lane, City:—

Cooper	£759
Watson, Bros.	725
Smith	700
Waterson & Co.	695
Blease	650
Carmody	645
Day	635
Mason & Bristy	625
Machin	620
Chaplin	615
Brazzer	600
Kipps	577
German	575
Pierpoint	570
Boyd	565
Button	560
Ivory	495
Gooding	485
Blackburn	475
Warr	469
Collins	425

Surrey.—For house in Salmon's-lane, Caterham, near Warlingham Station, for T. Leonino, Esq. Mr. Richard Martin, architect. Qnantities supplied by Mr. Frederick Sparrow, 80, Richmond-road, N.:—

Langmead & Way	£1213
Turner & Sons	1190
Smethurst	1145
Jarrett	1140
Ward	1123
Bray	1050

Uxbridge.—For new offices in High-street, and warehouse, &c., for Messrs. Grimsdale & Sons. Mr. C. J. Shoppee, architect, London. Quantities supplied by Mr. Sidney Young:—

Adamson & Sons	£1369
Conder	1363
Taylor	1309
Kearley	1290
Gibson, Bros.	1287
Brass	1128
Fassnidge & Sons (accepted)	1092

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Cleckheaton Local Board, May 1.—For the erection of five double sets of 5-brick Gas Retorts. David Hirst, Clerk to the said Local Board.

Walton Improvement Commission, Essex, May 1.—For the sea-wall and defences opposite the Glebe, at Walton-on-the-Naze, Essex. Frederick B. Philbrick, Clerk to the Commissioners, Colchester.

Bradford, May 4.—For the sewering levelling, paving, flagging, channelling, and otherwise completing Queen-street, Brook-street, and Thorn-street. Robert Wilson, Clerk, Bradford.

Devizes, April 29.—For the restoration of Potterine Church, near Devizes, in the county of Wilts. Architect, Mr. Christiau, 8a, Whitehall-place, London.

Bampton East Highway District, April 25.—For the maintenance and repair of the highways of the several parishes within the said district (except the parish of Hanborough). Mr. William Edwards, District Surveyor, Witney.

Brighton, April 28.—For the bricklayer's, carpenter's, and builder's work to be done in making certain alterations and additions to the various public offices, and other parts of the town hall. David Black, Town Clerk.

Aberayon, April 30.—For the erection of a new church at Aberayron, Cardiganshire. Messrs. Middleton and Goodman, 1, Bedford-buildings, Cheltenham, Architects.

Mirfield Parish Church, May 1.—For the warming of the new parish church. R. Lee Rayner, solicitor, Mirfield, honorary secretary to the Building Committee.

Reigate Western Sewer, May 1.—For the construction of a main sewer from near the Park Pond, at Reigate, under the Park hill, to the irrigation works, at Earlswood. Clair J. Grece, town clerk and clerk to the said local board.

Maidenhead, 'May 1.—For the erection of new schools. Christr. G. Wray, F.R.I.B.A., architect, 46, Cannon-street, London.

Ireland, May 1.—For erecting and completing a new barrack for the Royal Irish Constabulary, at Chirciveen, county Kerry. Mr. Arthur T. Williams, 9, Newnham-place, Cork.

Ireland, May 1.—For erecting and completing a new barrack for the Royal Irish Constabulary, at Bruff, county Limerick. Mr. Martin Morris, No. 3, Richmond-terrace, Limerick.

Pitcaple, May 4.—For the mason, carpenter, and slater work of completing the steading of offices at Loanends, Durno, by Pitcaple. Alex. Geddes, Logie Elphinstone.

Trinity House, London, E.C., April 24.—For the erection of a lighthouse, keepers' dwellings, &c., at Hartland Point, in the County of Devon. Robin Allen, secretary.

Wanstead Local Board of Health, April 29.—For the formation of a certain intended roadway, with drainage and other works. John Rogers Jennings, Clerk and Solicitor to the said Board.

Gorseley, May 6.—For the erection of a school and teacher's house, at Gorseley, near Newent, Gloucestershire. Middleton and Goodman, architects, 1, Bedford-buildings, Cheltenham.

Guildford Waterworks, April 25.—For sinking a well in Mill Mead. Thomas Russell, Clerk to the Local Board, Guildford.

Basingstoke Waterworks, April 29.—For supplying and delivering of about 190 tons of several size pipes. Messrs. Russ and Minns, 9, Victoria-chambers, Westminster, S.W.

Darlaston, April 24.—For making new streets on the Butcroft building estate, in the parish of Darlaston. Loxton Brothers, architects and surveyors, Victoria-chambers, Wednesbury.

Coleford (Gloucester), May 6.—For the erection of a church. Middleton and Goodman, architects, 1, Bedford-buildings, Cheltenham.

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BATH AND OTHER BUILDING STONES OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,

Quarrymen and Stone Merchants.

List of prices at the Quarries and Depôts, also cost of transit to any part of the United Kingdom furnished on application to

Bath Stone Office,

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TO ARCHITECTS.

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In Railway Trucks, Docks, Gloucester:—

			Per 1,2 0 Slates.	Equivalent to per square
Best Green	Slates	14 by 7	2 17 6	16s. 6d.
Do.	do.	13 by 8	2 17 6	16s. 6d.
Do.	do.	13 by 7	2 5 0	14s.
Do.	do.	12 by 7	1 18 6	13s.
Do.	do.	12 by 6	1 7 6	11s.

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MESSRS. RANDELL & CO., Corsham, Wilts.

Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street, Westminster.

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LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

Lead:

Pig—Foreign	per ton	£17	17	6	£18	0	0
„ English W.B.	do	19	15	0	20	0	0
„ Lead Co.	do	19	0	0	0	0	0
„ Other brands	do	18	5	0	18	10	0
Sheet Milled	do	18	15	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or minium	do	19	15	0	20	10	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry	do	27	0	0	0	0	0
„ ground in oil	do	0	0	0	0	0	0

Copper.

British—Cake & Ingot	per ton	71	0	0	72	0	0
Best Selected	do	73	0	0	74	0	0
Sheet	do	74	0	0	77	0	0
Bottoms	do	79	0	0	0	0	0
Australian	do	71	0	0	75	10	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	10	0	66	10	0
„ Refined ingot	do	70	0	0	72	10	0
Yellow Metal	per lb.	0	0	6½	0	0	7¾

Iron.

Pig in Scotland, cash	per ton	2	15	4½	0	0	0
Welsh Bar, in London	do	7	0	0	7	10	0
„ Wales	do	6	7	6	6	12	6
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	15	0	7	0	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	10	0	7	15	0
Swedish	do	9	15	0	10	0	0

Timber.

Teak	load	12	5	0	12	10	0
Quebec, red pine	„	3	15	0	4	15	0
„ yellow pine	„	4	5	0	5	0	0
St. John N.B. yellow	„	0	0	0	0	0	0
Quebec oak, white	„	6	0	0	6	5	0
„ birch	„	3	5	0	4	10	0
„ elm	„	4	0	0	4	10	0
Dantzic oak	„	5	5	0	6	10	0
„ fir	„	2	10	0	4	10	0
Memel fir	„	2	10	0	3	10	0
Riga	„	3	5	0	3	10	0
Swedish	„	2	5	0	2	15	0
Masts, Quebec red pine	„	4	0	0	6	10	0
„ yellow pine	„	4	0	0	6	10	0
Lathwood, Dantzic, fm.	„	3	0	0	5	0	0
„ St. Petersburg	„	5	5	0	5	15	0
Deals, per C., 12ft. by 3 by 9in.,							
Quebec, white sprnce	„	12	10	0	18	0	0
St. John, white spruce	„	12	10	0	14	10	0
Yellow pine, pr reduced C							
Canada, 1st quality	„	18	0	0	19	10	0
„ 2nd do	„	13	5	0	14	0	0
Archangel, yellow	„	12	5	0	14	10	0
St. Petersburg, yellow	„	13	0	0	13	10	0
Finland	„	7	0	0	8	0	0
Memel	„	0	0	0	0	0	0
Gothenburg, yellow	„	8	10	0	10	10	0
„ white	„	8	10	0	9	10	0
Gefle, yellow	„	10	10	0	12	10	0
Soderham	„	8	10	0	12	0	0
Christiania, per C., 12ft. by 3 by 9in., yellow	„	10	0	0	12	10	0
Flooring boards, pr square of 1in., first yellow	„	0	7	6	0	10	6
First white	„	0	7	0	0	9	6
Second qualities	„	0	6	0	0	7	0

Oils, &c.

Seal, pale	per tun	37	10	0	38	0	0
Sperm body	„	83	0	0	84	0	0
Cod	„	35	0	0	35	10	0
Whale, South Sea, pale	„	33	0	0	33	10	0
Olive, Gallipoli	„	49	0	0	0	0	0
Cocoanut, Cochin, tun	„	46	0	0	48	0	0
Palm, fine	„	38	0	0	0	0	0
Linseed	„	31	10	0	31	15	0
Rapeseed, Eng. pale	„	45	0	0	0	0	0
Cottonseed	„	27	0	0	32	10	0

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BANKRUPTS.

TO SURRENDER IN LONDON.

Williams, Alfred, Warwick-road West, Paddington, builder, April 28, at 11.

TO SURRENDER IN THE COUNTRY.

Price, David Griffith, Cardiff, builder, April 29, at Cardiff.—Thornton, William, S. John's-hill, Wandsworth, builder, May 5, at Wandsworth.

BANKRUPTCY ANNULLED.

Ford, Henry, and Attwood, William Henry, Eastbourne, builders, April 11.

PUBLIC EXAMINATIONS.

May 23, F. G. Rimell, Asylum-road, Peckham, builder.—May 4, J. and J. Wilkinson, Sheffield, builders.

DECLARATIONS OF DIVIDENDS.

J. Browd and C. Leach, Halifax, builders, div. 5s.—A. Marriot, S. Neot's, gas and hot water engineer, div. 3s. 8¾d.—J. Cutler, Bournemouth, builder, div. 5s. 1¾d.—Blache and Co., Wilson-street, Finsbury, and Ranelagh-road, Pimlico, timber and veneer merchants, div. 1½d.

SCOTCH SEQUESTRATIONS.

John Robertson, Leith, builder, April 24, at 2.—Alexander M'Donald, Lerwick, housewright and joiner, April 21, at 12.

PARTNERSHIPS DISSOLVED.

Maples and Capps, Spalding, timber merchants.—Hillyer and Benfell, Wokingham, brick makers.—Lee and Welsh, Leeds, marble masons.—Wrigley and Dawson, Manchester, engineers.—J. and T. Frank, Pickering, timber merchants.—Harper, King, and Co., Union-court, Old Broad-street, iron founders.—Scrivener and Stephenson, Chipping Barnet and New Barnet, builders.—Walkden, Hill, and Co., Rochdale, brickmakers.—Garratt and Holmes, Birmingham, plumbers.—Apperly and Co., Dudbridge, Gloucestershire, engineers, Shellard and Sons, Keynsham and Bristol, lime burners.—Hollingworth and Eastwood, Leeds, joiners.—Sutcliffe and Sons, Brighouse, Yorkshire, engineers.—Jones and Sutcliffe, Heaton Norris, iron founders.

THE BUILDING NEWS.

LONDON, FRIDAY, APRIL 28, 1871.

THE AGE OF EXHIBITIONS.

THIS is the era of direct industrial and artistic emulations. We borrowed its spirit, no doubt, from remote epochs, from the days that saw the games of Greece and Rome, from the tournaments of the Mediæval times, from those who first instituted races by land and water. Those were competitions in strength, agility, courage, the use of arms, and sports; yet all represented the same feeling, though rarely did two nations enter the contest together, except in fatal earnest. Now, however, there is scarcely a field upon which these rivalries are not undertaken; horses, cattle, swine, dogs, even babies, have been brought together to challenge a prize, and, at last, the battle for the championship in works of beauty, taste, and utility is nothing less ardent than the strainings for victory on the Derby course or in the Oxford and Cambridge boat race. The desire is to press forward, to carry the colours in first, to win public testimonials, to wear the Olympian or the Isthmian crown, though not to brandish the bloody trophies of the Colisseum. The idea, of course, is not new. It fascinated the French Republicans of the last century; it was adopted by the Empire and the Restoration; it made its way, feebly at first, in England; but thence it spread to Italy, Turkey, the United States, Spain, and the British Colonies, with amazing celerity. We, however, atoned for our slowness by the Palaces of 1851 and 1862, and France did not exceed us by her more ambitious temples of 1855 and 1867. The provinces and Ireland followed, and at length, in London, International Exhibitions are to be institutions of annual re-appearance. And the cause? It is a growth of the modern intellect. If we seek a reason why the Polar regions, the temperate zones and the torrid, the lofty hills and the deep valleys, should have been created; why all portions of the earth's surface, why the Polar cold and the equinoctial heat should not have been commingled to create one equable Paradise, yielding all things necessary to man, it may be found, apart from all the mechanical and chemical considerations governing the economy of the physical world, in the needful stimulus to the moral nature of man, the necessity of bringing the denizens of the entire surface of the globe into personal communion, for the purpose of exchanging their different productions; thence commerce, or mutual buying and selling; thence rival self-seeking; and thence improvements. As the wind carries winged seeds over the earth, so trade carries arts, civilisation, and humanity, as a consequence; but it has become an instinct, at last, to compare the results and understand the process. Who thinks of the freight which is in the hold of a great East-Indiaman, unless to calculate its value? Who? Because few have had set before them the possible fruit that cargo may bear, far and wide, or the cost and labour-saving inventions that enhance the merchant's profit. Well, an International Exhibition admits the thoughtful public behind the scenes and into the penetralia; it gathers a concourse of "commercial travellers" from every quarter, whose packs are all opened simultaneously; it is, as it were, a demand for fair play in the universal market; there is no exclusiveness in this comprehensive show-room. Natural enemies and ancient allies, Frenchmen and Englishmen, Venetian and Turk, Portuguese and Parsees, are admitted upon free terms, into the arena, and, notwithstanding we have observed that the scheme of competitive exhibitions is not new, that of international exhibitions, on a grand and generous scale, dates unquestionably from 1851. All mankind were then invited to the friendly struggle, to hear with their own ears, and see with their own eyes, the voices and works of civilisation, and know what industry had done with its hands, and intellect had directed with its brains. Originally, the project was to promote brotherhood among mankind—an idealism long since dissipated, at least so far as regards the influences of 1851; to make all cognizant of what each can do for others—a lesson never ending, still beginning; to diminish human drudgery by mechanism; to promote arts of the higher kind; to show how clothing may best be made by machinery, without handicraftship; and to prove how much more abundant and various than had hitherto been imagined were the materials of human food. Its compass, of course, was in detail greater, embracing all, and more, that has grown out of the ingenuity of men from the day when the aboriginal Briton painted his skin with "the juice of woad," to that on which a forty ton locomotive was transmitted from Paddington to Hyde Park with no more difficulty than if it had been a toy. Its aim, perhaps, was wider still—to exclude, if we may so speak, all exclusion, to mingle the feelings and wants, the happiness and prosperity, of all nations, and to evolve out of individual rivalry a common triumph. But, descending to a more practical level, what, looking afar, yet not omitting to look also behind, may ultimately be anticipated from the proofs of human capacity and power of learning afforded by these emulations? That every large farm shall possess its rail or tramway; that land shall be cultivated in circles by the force of a central engine; that drains shall be made by ploughs? Possibly. However, we look for changes applicable to the more numerous and familiar wants of life, as, for example, in the matter of clothing. International exhibitions have advanced us but little in these respects. All nations have presented their costumes, but the new fashions, the new materials, even the new head-covering—where are they? Where is the clothing made without hands, without stitches; the art which is to extinguish the class of sempstresses, and say to them, "Be no more?" Still hang the furlongs of cloth upon the walls; still click the shears that cut it into fragments; still stands the needlemaker, manipulating his morsels of steel-wire; still exist sewing-machines, notwithstanding the wretched slaves of slop-work. As for taste, the progress is even less, and we have not much to copy from the vaunted picturesqueness of other lands. The lay-figure of modern Greece is as ugly as gold-lace can make it, not being excelled even by Tunis or Eastern India, or any other half-savage country, in its total absence of grace. It may be that the beauty of undraped forms has rendered the world indifferent to the caprices of its costume. But what, after all, is the significance of clothing? Not merely that we shall conceal ourselves with coverings of spun wool, silk, or cotton; not simply that we must keep our bodies warm. Both purposes are equally answered by the flowing robes of the Turk, the silk stockings and breeches of the last century, or the male stiffnesses and feminine furbelows of the present. Well, this last point tempts us back to another, and we must recal, to some extent, our opinion that nothing is to be learned from the less cultivated races in the matter of dress. Only a European would wear what is called a fancy waistcoat, or a cross-barred pair of trousers, a Scotch plaid or a plaid shawl. Chequered lines disfigure the human form, vertical lines do not. Whether from facility of weaving, or whatever cause, Moorish and Arab cloaks, and the South American poncho patterns, consist chiefly of vertical stripes, and constitute elegant draperies. These are among the lessons to be learned, even down to the humble necessity, boots. When will the alternative cease to lie between filthy blacking, useless in rain, and patent leather, elegant for a lounge, but most unhealthy for walking? It is true, we have been taught some things, both by exhibitions and the habits of Continental travel they have induced, and nobody expected an Utopia of taste and convenience all at once. But we must not be led into thinking that these proposed shows are the only exhibitions of the age. Every Italian gallery, from the Vatican to the Pitti Palace, every shattered and crumbling tomb along the Via Dolorosa, the arches of the Colisseum, all columns that rise like enchanted shapes of snow upon the hills and headlands of Greece, all of Doric, and Corinthian, and Ionian beauty that remains to us, each Aphrodite and Phryne, each Psyche and Eros, every graven gem and every Titan wall wrought in the far past—all these are exhibitions. The British Museum is one, the National Gallery is another, and that at South Kensington is an inexhaustible repertory. Nevertheless, the displays to which we are more particularly adverting are calculated to produce a more immediate effect, because they are special and evanescent, and one effect has been, in every instance, to set amazing numbers of the world's inhabitants in motion. Many people, truly, did run to and fro. Remember, for example, the statistics of 1851. Not the Goths who overran Italy, not the armies of Xerxes, not the host of Semiramis, approached comparison with the foreign multitudes which thronged to Hyde Park in that year. Of the sixty-two sovereign states then composing Europe, only eight had a larger population. The Athenian Empire never reached so high a point. With half that number the Macedonian madman conquered Western Asia. Venice, at her proudest, counted not so many subjects. Holland could not have sent half the crowd, supposing her to have exported every Dutchman, nor Sweden and Norway, nor Denmark and Portugal united; nor Bavaria and Wurtemburg, even though they had emptied themselves. Wurtemburg, indeed, with Saxony, Hanover, Lubeck, Frankfort, and Bremen would have failed. But France sent her peaceful soldiers to a total three times out-numbering the first Napoleon's terrible Army of England; Prussia, a larger force than ever the Great Frederick led; Austria, more men than found their way through Brandenburg during the Thirty Years' War. There never was, indeed, considering the space of time, so general a movement of people in Europe. And this must be regarded as a fact of the highest importance, characterising the Age of Exhibitions. It must not, however, be supposed that they receive encouragement from all sides. It is said that they lead to the undue pressing and canvassing of manufacturers and traders; that they are expensive frivolities, which we cannot afford; that they result in no practical good; that they admit the foreigner to pry among our industrial secrets; that they are no more instructive than a Chinese collection, or a museum of hunting spoils; that every shop in London is in itself an exhibition—which we grant—and that, consequently, these huge bazaars are unnecessary, and even injurious; that they create jealousies and foster a habit of servile imitation; that they copy the policy of King Hezekiah, who repented of having opened the doors of his treasure-house; and that they tend to merge England in a sort of cosmopolitan league, in which she will lose her historical character. Experience has disposed of these objections. Every successive exhibition has been more popular and successful than its predecessor; and there have been no occasions when people unable to travel have been so delighted as by making the tour of the world beneath these crystal roofs. It is not only products that they are introduced to; it is to arts, to manners, to history. They begin to apprehend why England is what she is; why France is what she is; why the East is different from the West; why there is one human stamp in the region of La Plata, and another within the frozen limits of the habitable earth. See the Arabian category—the harness, the tent covering, the saddle, the sword, and, above all, the veil. How the Chinaman works with his fingers; while the Hindoo sits so patiently at his loom. How the impress of complex machinery becomes deeper and more distinct as we approach the populous territories of Western Europe. How the history of war is simply related by its weapons. What a tremendous part is played by iron and coal. How the Exhibitions that have come and gone have each marked positive and ineffaceable lines upon the artistic and industrial aspects of the world. It would be impossible to suggest all this in any other way. Moreover, these associated efforts have done away for ever with the abominable old doctrine that one nation's industry is another nation's gain—a doctrine unworthy of the illustrious writer who, though the sentiment had long previously existed, first gave it a form. The principle now is that trade is for mutual advantage, and that rivalry means a desire to improve. We have thus glanced at the general aspects, large and minute, lofty and humble—from the high arts, indeed, down to shoe-blacking—of those artistic and industrial concourses unknown to other times, of which a series is to be opened on a noble scale in London this year. It is worth while to think of the International Exhibition before seeing it. And, we may add, we have noted similar aspects—visibly sought for everywhere—at Manchester, Dublin, Leeds, and Derby; at Paris, Havre, Bordeaux, Amsterdam, Leipsic, Antwerp, Munich, where the same energy was seen, working in the same direction, and marking this as emphatically an Exhibition Age.

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ARCHITECTURE AT THE ROYAL ACADEMY.

ARCHITECTURE is certainly not well represented this year at the Royal Academy, and the fault does not lie at the door of the Academy itself. Oil paintings invade, it is true, the small portion of the one room which, instead of the whole, is this year appropriated to architectural drawings; but architects may be thankful for the assistance thus lent by the painters of architectural subjects, for their own works alone would have made but a pitiable show. Whether it will be proved that the International Exhibition at South Kensington has attracted to itself the greater share of the efforts of our profession, to the detriment of the Academy, remains to be seen. Should this have been the case we cannot commend the wisdom of the choice made. The architectural members of the Academy are conspicuous by their absence upon this occasion. A single but interesting drawing of the proposed restoration of the Cathedral of Christ-Church, Dublin, by Mr. Street, is the sole contribution of the Royal Academicians, as neither Mr. Scott nor Mr. Barry has sent anything. Mr. Pearson has a good drawing of the interior of the fine vaulted church he is building at Kilburn; Mr. Seddon, an effective drawing of his Terrace at Aberystwith, and an elaborate composition for the interior decoration of the chapel of Christ's College, Brecon; and Messrs. Ponton and Gough, of Bristol, a very good drawing of the interior of a church they are erecting near Bristol, in a somewhat novel but good style. Mr. Edis has two or three very pleasant drawings of houses and mansions, and particularly one showing the restoration of the old Bishop's Palace at Buckden. Mr. Brooks has several interiors of his East-end churches, all of which are hung too high for examination, which is a pity. Mr. Emerson has a careful pen-and-ink geometrical drawing of the detail of the cathedral of Allahabad, which, from its elevated position, will require an opera-glass for its examination. Mr. Waterhouse has sent drawings which, though evidently coloured, as usual, by himself, lack the bright and clear effect he generally attains. One represents the clock-tower of his Manchester Town-hall, the perspective of which is so violent that the architecture cannot well be seen. The other drawing is of the S.W. angle of Eaton Hall, Cheshire. Mr. G. G. Scott, jun., has a clever design and fine drawing of a competition design, and Messrs. Hesketh and Watson's designs for the same building are also noticeable as drawings. Their interior is, indeed, remarkable for beauty of execution, combined with eccentricity and ungainliness in the proposed structure itself. Sir M. D. Wyatt has a design for a ceiling for Clare Hall, Cambridge, and other drawings; and Mr. Horace Jones his Guildhall library. Mr. Gibson also exhibits a large drawing of Todmorden Town-hall. Mr. D. Brandon, Mr. F. Cockerell, Messrs. Habershon and Pite, and Mr. Norton have sundry designs for country mansions, all left far in the shade by Mr. Norman Shaw, who has sent one exquisite drawing of a mansion recalling in style those which he had in last year's exhibition, and of which we gave reduced *fac-similes* in a recent number of our journal.

The department of architectural sketches is fairly supported by Mr. Florence, Mr. Crace, Mr. Phéne Spiers, and Mr. A. W. Hands. The drawings of the last-named young artist are exceedingly delicate and refined in colour. We have only to note what may be called the productions of the painters in oil of architectural subjects. The most prominent of these is a representation of the Bank of England Parlour, by Mr. Wingfield, a somewhat commonplace subject, but ennobled by most able treatment. Mr. Brewer has several of his effective and picturesque paintings; Mr. Allom a large one, which will hardly sustain his deservedly high reputation; but Mr. George and Mr. Nash, in their several contributions, sustain the character of their previous works. Mr. Talbot Bury's pleasing but slight sketch of St. Jacques, Dieppe, should also be mentioned; and, lastly, a good and richly coloured drawing by Mr. A. Booker, of four angelic musicians, will not be passed unnoticed.

The brief list we have thus given will show that the architectural drawings of the Academy will not be barren of interest; but it will not do credit to the profession generally, although it may to some of its individual members.

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THE NEW LOCAL GOVERNMENT BILL.

THE principal alterations in the present state of things which are proposed to be made by the Bill which the Government have just laid before Parliament, are as follow:—

1. The establishment of a superintending authority in every parish, to be called the parochial board.
2. The establishment of county boards.
3. The substitution of one rate and one collector for each parish, due at stated times (four times a year), instead of several rates and several collectors due at various times.
4. The establishment of one central authority, to be called the Local Government Board, instead of the three authorities to whom questions of local government are now referred—viz., the Poor Law Board, the Home Office, and the Privy Council.
5. The joining together by this latter authority of two or more parishes into one area, having one sanitary board, or the division of any parish into two or more separate areas, each having a sanitary board.

In order to effect these alterations the ratepayers of every parish are to assemble in vestry on one of the first seven days in March of every year, for the purpose of electing the parochial board and a chairman of the board, the number of members being not less than three or more than twenty, and being between these limits, in proportion to the population of the parish. No person will be qualified to be chairman of a parochial board unless he is the owner or occupier of property of a rateable value of not less than £40 a year. This board will take all the duties, rights, and obligations of the present overseers of the poor, of the surveyors of highways in the parish, and the lighting and watching arrangements; and parish constables are to be abolished.

The chairman of a parochial board is evidently intended to be an important personage. He is to preside at all meetings of the board and of the vestry, and is to represent the parish on all occasions when individual representation of the parish is required, and may do, on behalf of the parish, any act which the parochial board might do.

A few years ago an Act of Parliament was passed authorising a number of parishes, the inhabitants of which had up to that time repaired their own highways separately in each parish, to combine themselves into a highway district for the purpose of the better repair and management of the roads by a paid surveyor than could be done by the honorary parish surveyors of highways separately, and in this bill the waywardens of those parishes which have thus been included in highway districts are to continue in office, and are to be elected by the vestry on the same day as the parochial board, and are annually to vacate their offices on the same day on which the members of the parochial board vacate theirs. The guardians of the poor also, who are elected by the parishioners, are to be elected on the same day and vacate their office on the same day as the members of the parochial board. The office of chairman of the parochial board, of guardian, and of waywarden, or any two of these offices, may be held by the same person. The members of the board thus elected, and the chairman, are to come into office on the 5th of April in every year, and are to vacate their offices on the corresponding day in the following year.

The county board is to consist of the lord-lieutenant of the county, the chairmen of the quarter sessions of the county, some of the county magistrates, and some of the chairmen of the parochial boards within the county. The bill, of course, provides for the manner in which the representatives of these two latter bodies are to be elected, and the number of them in each case, but the details need not here be stated; they seem, however, to have been well considered. The members of the county board are to come into office and vacate it on the same day as that above stated for the parochial board—viz., the 5th of April.

One rate, as we have stated, is to be made in every parish, to be called the consolidated rate, and it to include all the rates now leviable by the separate authorities, such as town councils, boards of improvement commissioners, local boards of health, highway boards, and boards of guardians. Each of these authorities, or any other that may have power to levy a rate on the inhabitants of a district for local purposes, are to estimate what sum they will require for the twelve months from one 5th of April to the next, and deliver to the chairman of the parochial board, thirty days at the least before the 5th of April in each year, a precept stating the sums they require for the twelve months, and as soon after that date as may be the chairman is to cause a consolidated rate to be made and assessed, sufficient to satisfy the demands of the precepts. This rate is to be collected quarterly. The collector is to serve on every occupier of rateable property a demand note, stating the amount of the fund to be raised by the consolidated rate, the rate in the pound, the rate in the pound required in respect of each precept, the amount to be paid by each occupier during the ensuing year, and the manner and time of paying such amount. Having done this, it is considered that the collector will have done *his* duty, and then it will become the duty of the occupier to pay his quarterly rate within seven days of its becoming payable, in default of which the payment may be enforced by a summary order.

This certainly is a simpler plan than the present one, and easier to both the collector and the ratepayer. Under it a householder will know exactly how much he has to provide for, and when he has to pay it, and for what purpose it is to be paid, while now the poor-rate collector may come on one day, the collector of the highway and sewer rate the next, he of the lighting rate on a third, and if the water works and gas works of a town belong to the local authority, the collectors of the rates for those purposes on a fourth and a fifth; the result being that people seldom know how much they have to pay in a year, or for what they pay it, and they are sometimes neither prepared with the money due, nor have any satisfaction in knowing how much they are contributing to the expenses of the local government.

The next proposed alteration is to have one minister to whom all questions of local government shall be referred when necessary, instead of, as now, by direction of various Acts of Parliament, referring some questions to the Poor Law Board, others to the Home Secretary, and again others to the Privy Council. This minister is to take the place of all three of these central authorities in respect of local affairs, and is to be appointed by Her Majesty, and hold office during Her Majesty's pleasure. He is to be assisted *ex officio* by all Her Majesty's principal Secretaries of State, the Lord Privy Seal, and the Chancellor of the Exchequer. The present Poor Law Board will be done away with.

This Local Government Board will, as we said fifthly, where several contiguous parishes, each of them separately too small to require a parochial board, or rather to make it economical to have a board for each, have the power to combine two or more of them and form one board for their joint jurisdiction; and, on the other hand, where parishes are so large as to make it inconvenient to place them under the jurisdiction of one board, will have equal power to divide them into two or more separate districts. This, we take it, will not in many cases be necessary, because in most large parishes there exist already separate districts under the authority of town councils, improvement commissioners, or local boards, and the outlying parts of the parish will seldom need to be again divided.

There is in this Bill a sixth principal alteration of the existing state of things—viz., that the owner of any rateable property shall pay one half of the rate levied upon it, and which the occupier must in the first instance pay to the parochial authority, along with his own half share, but which he will be entitled to deduct from his rent when he next pays it.

Having regard to existing institutions, such as cities and boroughs, with their mayors and corporations; to unincorporated towns for the government of which Improvement Acts have been obtained, and which are under the authority of improvement commissions; and to those other towns where the Local Government Act, 1858, has been adopted, and which are under the authority of local boards, these bodies respectively are to continue to be the sanitary authorities, and where there remains a population of 3,000 in any parish who are excluded from the district of a town council, an improvement commission, or a local board, that outlying part of a parish is to be constituted a separate sanitary district, under the authority of the parochial board.

Trees Out of Place.—Trees are out of place (says a writer in the *Farmer*) when they overshadow the roof of a house, or darken its windows, or shut out a fine prospect. It is the testimony of eminent physicians that no small part of the sickness of families is attributable to the shading of dwellings by overhanging trees and thick clustering vines. Our bodies need light, pure sunlight, and a great deal of it, and our spirits need it none the less; and he who shuts out this genial dispenser of health makes a great mistake, and does a great wrong.

ARCHITECTURAL ASSOCIATION.

At the usual fortnightly meeting of this association on Friday evening last, the President, Mr. T. H. Watson occupied the chair. Mr. Thomas Garrett having been elected a member, Mr. J. S. Quilter, one of the honorary secretaries, announced that arrangements were in progress for the annual excursion of the members, under the auspices of Mr. Edmund Sharpe, of Lancaster, as was the case last year. The neighbourhood proposed to be visited this year is that of Ely, Lynn, Wisbeach, and Boston, and the time suggested is the end of July or beginning of August next. Mr. Sharpe has kindly consented to bear the whole of the expenses of the excursion save those of board, lodging, and travelling. Two or three announcements having been made with respect to the Water Colour and Surveying Classes,

Mr. J. Tavenor Perry, A. R. I. B. A., read a paper

ON THE ECCLESIASTICAL ANTIQUITIES OF DOVER.

Mr. Perry, after some preliminary observations, said that the buildings in Dover of which he should give some account were the church of S. Mary in the Castle, the two priories of S. Martin—the old work and the new work—the so-called chapel of King John in the Keep, the churches of S. Mary, S. James, and S. Nicholas, the Templars' Church on the heights, and the Maison Dieu.

The Castle Church is one of the oldest buildings remaining in the country. Some traditions say that the first building was erected by King Lucius, a somewhat mythical personage. A second tradition ascribes the foundation to Eadbald, son of Ethelbert. Eadbald either built the church, or restored the older British one of the reign of Lucius, and there is little doubt, in the opinion of Mr. Perry, that a large portion of the present edifice belongs to one or other of those dates. The plan of the church is cruciform, somewhat irregularly set out, with a tower at the crossing, and a detached western tower. The latter is no doubt Roman work, so far as the lower part is concerned, and was erected before the church was founded. It is octagonal on plan, built to a great extent of tufa, and had the upper parts re-cased in the fifteenth century. For breadth of effect and boldness of design, the church has little in common with preconceived notions of ordinary so-called Saxon work. The span of the great arches and the height of the openings are unlike those in examples existing at Barnack and elsewhere of the later periods of the Saxon dynasties.

Regarding the priories of S. Martin, Mr. Perry said that it was not easy to say when the old church was built to which the remains now existing belonged. If, however, the portion standing at the west side of the market-place be, as is commonly supposed, a portion of the apsidal chapels of a chevet, the date of its erection was not much anterior to the date of its dissolution. In 1131 Archbishop Corboil commenced the new priory, and dedicated his church to S. Mary and S. Martin, though the building was then known as the New Work, and has, ever since then, kept that name. Dover after the Norman Conquest became a most important port, and to this cause is to be ascribed the large provision for guests which was made in the New Work. The sole remaining portions of this magnificent group of buildings beside the Abbey Gateway, are the refectory and the guest-house, or prior's parlour. The buildings, so far as they can be traced, comprised the church on the south side, and the refectory on the north side of the cloister; chapter-house, &c., on the east side, and offices of other kinds on the west. A detached group of buildings on the north west appear to have been the guests' lodgings, and at right angles with the west front of the church, and at some distance before it, stood the Abbey Gateway. These buildings appear to have all been built at the same period, and the Abbey completed in all respects during the lives of Archbishops Corboil and Theobald. The work was of the very best kind, and erected during the first half of the twelfth century, was doubtless very rich in carving. The church, although levelled with the ground, has been very carefully traced by Mr. Plumtree during the progress of works in the neighbourhood, which greatly facilitated the examination. It consisted of a nave, with aisles, choir, and transepts. The east end of the choir was square, and the aisles finished with small apses; and there were two apses to the east side of each transept. All chances of restoration of it are quite hopeless. The chancels are now a main street, and modern houses occupy the site of the choir and south aisle. The refectory stands almost perfect, and is one of the finest buildings of the kind remaining. The hall inside is 100ft. by 27ft., the walls throughout being 3ft. 6in. thick. The roof is almost entirely modern, but appears to be of the original pitch. This hall was most likely built in 1139. The walls were no doubt painted all round, and the east end still shows traces of a very fine painting of the Last Supper. In the restoration of this building, which is now being undertaken by the Dover College Company, little but the reglazing of the windows and some necessary repairs to the stone work will be done affecting the old parts. But a new roof, more in accordance with the style, will replace the present one. On the outside of the refectory, on the north walk of the cloister, stood the lavatory. This was cut into the old wall at a later period. The guest-house or priors' parlour is a hall with a single aisle standing in the north-west group of ruins, and partly in occupation as a house. Some of the buildings have been pulled down to make room for the Dover (Priory) Station of the Chatham and Dover Railway Company. Fortunately the Dover College Company have purchased the gate-house and refectory in time to save them from positive destruction; but they will no doubt soon be closely surrounded by second-rate houses, and have to be looked for among the back yards.

The Maison Dieu was founded by Hubert de Burgh in 1227, as a resting-place for strangers and pilgrims. It has in modern times been turned into a borough gaol. The scattered remains which are left show a large hall, lighted by large geometrical windows of several lights, a small western tower, and a small building which may have been a chapel.

The Chapel in the Keep is perhaps less known than any of the remains in Dover. It is called the Chapel of King John, and sometimes (erroneously) S. John's chapel. It consists of a two-storied building at the entrance to the keep, the lower one forming a vestibule to the entrance, and the upper one vaulted, and forming a domestic chapel. The date of the building would appear to be slightly subsequent to the date of the keep, and to have been to a certain extent an after-thought, as there is a double coat of ashlaring in the inside. Each story is divided into two parts by a richly-moulded arch, and the walls are surrounded by an arcade through which the windows are pierced. The arches of the arcade are all semi-circular, but the mouldings throughout are of the best period of the Transition. Dog-tooth and chevron mouldings are richly used, and these mouldings are curiously identical with those used by English William at Canterbury. Most probably one architect directed both works. The mouldings are executed in Caen stone, and the vaulting in large blocks of tufa. This work has lately been "restored' by the Royal Engineers!

S. Mary's Church, stated in Mr. Godwin's "Handbook" to have been built in 1223, is, for the most part, undoubtedly earlier. The tower and western parts appear to be of quite the early part of the twelfth century, while the rest, restored in the beginning of the nineteenth, is not worth fixing a date to.

S. Nicholas, Beach-street, was pulled down thirty years ago to improve the appearance of a street, but some fragments in the Museum remain to show how fine a church it was. It consisted of an aisle and chancel, a tower at the west end, and a crypt. From the carved bosses preserved it would seem that the work was Late, with a Flamboyant mixture, and richly carved.

The old church of S. James is of little interest beyond the fragments of Norman work in the doorway, while the churches of S. Peter and S. John have been destroyed. The Templars' Church on the heights was almost identical in size with the little chapel at Laon.

Mr. H. Jarvis, jun., in proposing a vote of thanks to Mr. Perry for his interesting paper, said that it furnished an example of the way in which a student might usefully employ a holiday by making a number of sketches on the spot, and returning home and reading up the subject afterwards.

Mr. Aldridge, in seconding the proposition, remarked that he had had great pleasure in accompanying Mr. Perry on one occasion over some of the buildings referred to in his paper, and until then he (Mr. Aldridge) had no idea how interesting a city Dover was to the architect. The guest-house and the refectory still contained sufficient features of interest to well repay a visit. He was, he believed, right in saying that Mr. Perry was now engaged in restoring, to some extent, some of these buildings, and he was sure that the work could not have been placed in better hands.

Mr. Douglass Mathews, in supporting the motion, said that the buildings which now existed included in Mr. Perry's paper ought to be seen to be fully appreciated. He (Mr. Mathews) knew little or nothing of any of the buildings except the Church of S. Mary in the Castle, and he was very glad to see that some time ago it was restored to its original purpose.

The Chairman having put the motion to the meeting, it was carried with acclamation, and Mr. Perry briefly responded.

The Chairman, in calling attention to the designs exhibited on the walls for the Soane Medallion and other prizes, said it was encouraging to see the style of drawing and power of design improving in the competitions for these prizes from year to year. It should be remembered by the members, however, when looking at the designs, that they should use their own judgment, and not accept everything as good which merely appeared to be so at the first blush. There were constantly to be seen drawings showing a great deal of character and intention upon the part of those who made them; but he thought that the members, as a class of students, were rather too apt to attach more value to such things than they really possessed. He noticed now that a method of getting up these drawings similar to that practised in the French school was coming into vogue in this country—viz., using tints in gradation. Certainly, whatever the design might be, this plan gave an amount of vigour to the drawings which was very noticeable, and was far more forcible than any amount of etching.

The proceedings then terminated.

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ON THE ECONOMICAL CONSTRUCTION OF WORKMEN'S DWELLINGS, AND ESPECIALLY IN REFERENCE TO IMPROVING THE HEALTH AND HABITS OF THE CLASS.*

THE author confined his observations to that part of the subject which relates to the provision of lodgings for single men. Having laid down some general principles for future guidance, Dr. Stallard proceeded to examine into the possibilities of profit, the danger which threatened to reduce the profit and convert it into loss, and then proceeded to inquire whether it was within the bounds of possibility to provide suitable buildings which should yield a profit of at least five or six per cent. to the capitalist. In the first place, he argued generally that 4d. per night, or 2s. per week, was within the reach of the poorest working man. This was the result of Mr. Archer's experience at Westminster, and he did not think it possible to find a poorer class. In the central parts of London it was quite as easy to obtain 6d. per night, or 3s. per week, as it is 4d., and the extra income would be rendered necessary by the extra cost of sites. But for the purpose of his proposals he should reckon 4d. per night, or 2s. per week, as the sum with which he had to deal. It was scarcely necessary to offer observations to prove that this, in the hands of the present proprietors of lodging-houses, was a remunerative sum. How, otherwise, could lodging-houses flourish as they did at even 3d. per night? A man and his family lived comfortably out of the profits of 20, 40, or 50 beds. When, a few years ago, a model lodging-house was opened in Liverpool by the Rev. Cecil Wray, there was not a decent lodging-house in the town. He opened with 134 beds, part at 4d. and part at 6d. per night. The profit, after paying every possible expense and adequate interest on every farthing of capital laid out, was at least £1 per bed per annum. Since then the rev. proprietor had opened a second establishment, and there were at this moment in Liverpool more than a thousand beds managed on the same plan at 4d. per night. One proprietor had two houses, each containing 80 beds, the profits on the two establishments being not less than £400 a-year. Yet the accommodation was by no means equal to that of a workhouse. The improvised nature of the houses made it impossible to secure adequate light and ventilation. The cubicles were more or less overrun with vermin. The lavatories, urinals, water-closets, and kitchens were open to many objections, and these structural defects greatly augmented the expense of firing, soap, linen, service, &c. All these objections applied with even greater force to the majority of London lodging-houses, and yet it was absolutely certain that they paid splendidly. At the present moment there were in London 1,310 registered houses, accommodating over 80,000 individuals. In Liverpool there were over 1,000 registered lodging-houses; indeed, in every centre of industry there was an enormous demand, which was very inadequately met. It might be objected that there were many failures. This, however, was not surprising when the general character of the keepers of these establishments was fairly reckoned up. Many were drunken bullies, without education, often without character. And even where societies had failed, there were reasons for such failures. In the case of the Soho Chambers, the Society for Improving the Dwellings of the Industrious Classes converted a large warehouse into a lodging-house for 128 single men, and they suffered a loss of more than £200 a year. It was surprising to find that, although the rents, taxes, and repairs exceeded £500 a year, it was not that great expenditure which caused the loss. If the beds had only been reasonably filled, *i.e.*, if there had been only 10 per cent. of empty beds, the income would have amounted to £850, which which might have been expected to cover reasonable outgoings besides the rent. But the beds were never full; the place was only an adaptation; the dormitories were uncomfortable, overrun with vermin, and ill-ventilated; whilst, on the other hand, service cost £226 15s. per annum, or near upon two pounds per bed. At Albert-buildings, Mile-end, an opposite mistake was made. The building was all that an enlightened architect could make it. It was provided with numerous workshops, a laundry, a library, and special restaurant, none of which, however, were ever used. The house was erected for 234 single men, and was never more than two-thirds full. Lodgers were not even coaxed into it by a reduction of the charge. It was altogether above the requirements of a Mile-end and Whitechapel population, and it has been converted into family dwellings. Again, it was not the high rent which was the cause of failure. If the building had proved really suitable, it might have been filled most easily, and the addition of another 20 per cent. of lodgers would have raised the interest actually obtained from one to five per cent. Nevertheless, the same profit would have been attained if the building had been strictly limited to the actual requirements of the occupiers. But it was not simply a want of lodgers or excessive rental which contributed to the failure. The size and perfection of the building involved an extravagant outlay in gas, coals, and service. By contrasting this service with that of the buildings in Great Peter-street, Westminster, it would be seen that in the one case it was £350 a year for 170 lodgers, whilst in the other it was less than £90 a year for 100 lodgers, and yet in the latter everything was against the cleaners. The rooms were small and ill-adapted to the purpose, and nothing but the most constant labour would serve to keep them in a creditable state. Dr. Stallard thought it might be concluded that rent ought not to be the cause of failure, and would not be if the buildings were kept sufficiently simple in their character, and suitable to the requirements of the classes it was desired should occupy them.

It was necessary to lay down certain rigid but very simple rules for the construction of such establishments. There were three great sanitary agents which it is scarcely possible to provide too lavishly—viz., light, air, and soap and water. Unseen dirt was never removed, and served as the nidus of vermin and disease. Of air it was impossible to get too much in a lodging-house, if it could be brought in without the creation of a distinct draught, of which the lodger had an insuperable dread. No part of any lodging-house should owe its cleanliness to paint or varnish, but to plain soap and water; in fact, no materials should be employed which would not wash. In the next place, all the materials should be cheap, and the fittings substantial. There must be no complicated machinery—nothing within the reach of the lodgers which can by any possibility get out of order. Water-closets should be excluded, as being altogether beyond and above the capacity of the lowest order of labourers; indeed, under their use, they become a source of continual expense. There must be no boilers, no steam engines, no ventilating apparatus requiring adjustment; in fact, everything must be well within the experience of the most ignorant. As to the accommodation, three things were essential:—1st, a separate sleeping apartment, which might be used as a dressing-room, workshop, or study; 2nd, a good kitchen, with an open fire; and 3rd, a general sitting-room, for reading, conversation, and amusement. Of these by far the most important was the first. The author proposed that every chamber should be 8ft. long, 4ft. 6in. wide, and with a ceiling 8ft. above the floor; made of perforated zinc. Above this ceiling was a passage, which communicated externally with the open air by means of perforated bricks, and internally with the interior of the building. As the door of the chamber ought not to reach the floor, there would always be an abundant supply of fresh air without the possibility of draught. A somewhat similar arrangement had been adopted at the Woking Convict Prison, but it was there spoiled by a perpendicular diaphragm within the passage, and the grating at the top of the cell was too open to keep out draught. The peculiar feature of this scheme of ventilation was that it depended on the large extent of opening for the admission and discharge of air, whereby diffusion took place without the possibility of draught. On this plan, every ceiling was practically open to the sky, and every floor was for purposes of ventilation at the top of the house. Moreover, the arrangements were quite beyond the control of the inmates. No one could shut it up or put a stop to the interchange which went on between the air of his room and that outside. The more open the passage was, the less would the violence of any extensive wind be felt, since its force would be expended in passing through the building, and not in passing through the room. The chambers had separate windows, and the doors opened on a corridor, which commenced from the first floor of the building, and was lighted from the top by a sky-light, also made to open freely on two sides. There were three tiers of chambers, the upper stories being approached by a staircase at the end, and by galleries around the corridor. As regards cubic space, the Army Sanitary Commissioners arrived at the conclusion that a man required 600 cubic feet for the maintenance of health. Now, a soldier existed under peculiarly favourable conditions. He was well and regularly fed, only moderately worked, and had no really dirty work to do; but a labouring man had to undertake all sorts of dirty work, his clothes were rarely clean, and his skin was generally grimy with dirt and perspiration; and yet, curiously, the law only provided that he should have 300 cubic feet in a common lodging-house, and 350 cubic feet in a sublet room. Space was far more essential to the working-man than to the soldier, and instead of being insensibly poisoned and prostrated by breathing offensive and expired air, he ought to be secured an abundance of that which imparted new vigour and new life, and by which he was enabled to rise refreshed from his slumbers. One of the great advantages of the plan which Dr. Stallard submitted to the meeting, would be, he said, that it would give to every occupant a space of more than 600 cubic feet, besides ventilation such as would not be found in any other form of building. As to the furniture of the chamber, there must be the means of clearing off the bedstead at a moment's notice, in order that the lodger might, if he chose, wash himself from head to foot without wetting the bed clothes, or that he might set to work at his trade, or that the attendant might properly wash the floor without hindrance. This might be accomplished in three different ways:—Firstly, by replacing the bed by a hammock, which, being taken off the hooks, might be rolled up and placed on a shelf provided for it; secondly, the bedstead might consist of an iron framework, fastened to the wall by a hinge; it was turned up close when not wanted, and the rolled-up bedding was, as before, put upon the shelf over head. The third was the simplest and the best plan. Let there be a low, wooden bedstead, strong and well jointed; it need not be more than from 8 to 12in. from the floor, and it must be so made as to stand upright in the corner of the chamber. Of course the bedding would be treated as before. There was yet another plan, but somewhat above the capacity of a fourpenny lodger class, however—viz., an iron camp chair bedstead, which folded up, and had a recess underneath for the bed clothes. Every chamber should have a wash-basin, a slop-pail, a water jug, and a towel; all of which articles might be fixtures, that is, fastened so that they could not be removed. Then there must be a looking-glass, a library shelf, a metal drinking cup, a table, stool, or chair. The floor should be of asphalte. It would be well, if practicable, to make a night-shirt part of the furniture; and perhaps its safety might be ensured by a small deposit. If the house were erected for a sixpenny class he would give a special gaslight, to be paid for at so much a week, if there was likely to be a demand for it. As to the service, the question of having the cleaning done by men or women was one which must be determined in some measure by the character of the lodgers; but Dr. Stallard was altogether in favour of employing women. Every chamber should have a private lock, and the superintendent a master key.

The other essentials in Dr. Stallard's plan were, he observed, provided in a special way, and on a principle which adapted itself to the number of beds in the building, whether 30 or 300. When the dormitories, as in George-street, Bloomsbury, were only 23ft. wide, and there were three stories, it was found that the ground floor was not sufficient for the kitchens, reading-room, and superintendent's offices, &c. In his plan, he had widened the building without augmenting the quantity of flooring at the upper part, and the increased space thus provided contributed greatly to the wholesomeness of the bed-rooms. By having this space and the ventilating passages above the ceilings they got rid of all special apparatus for ventilation. What were called ventilating shafts were quite as often inlets as outlets when they acted, and they often never acted at all. But by thus widening the building a large space for kitchen, &c., was obtained on the ground-floor, and also a large floor space on the first-floor, which might be used as a general reading-room, or parcelled out into special sitting-rooms, as in the plan. The superintendent's apartments and staircase were placed at the entrance; and the offices, viz., day lavatories, urinals, coal-house, and general storeplace, might either occupy a portion on the ground-floor or be placed outside. Baths might be managed in the basement, below the entrance-hall and lodge. They were desirable where there were no baths near, but Dr. Stallard would not erect them until the tenant was willing to pay full rent for them. There should be a cooking-grate for every 70 lodgers, and it was desirable that there should not be more than two cooking ranges in one room. As regarded the living rooms, it was desirable that there should be as much variation in the building as possible, due regard being had to the economy of fuel and service. Where the numbers exceded 100 it would not be difficult to have a special smoking-room. After consultation with practical men he was of opinion that a building for 200 would prove most economical.

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* Abstract of a paper read before the Society of Arts, on Wednesday, the 19th inst., by Mr. J. H. Stallard, M.B., &c.

As to the cost, he referred to the estimate of Mr. Saxon Suell, in whose judgment and experience be had the greatest confidence. Mr. Snell had erected some most admirable infirm wards in the City-road at a price within the estimated cost. The accommodation provided in the plans he had prepared for the author consisted of 204 bedrooms, 8ft. long by 4ft. wide, with an available breathing-space of 720 cubic feet per bed, and adequate ventilation, on the plan already noticed, on the first, second, and third floors; 16 private sitting-rooms, each 9ft. long and 8ft. wide, on the first-floor; porter's lodge, lavatories, water-closets, kitchen, reading, conversation, and dining-rooms, of adequate size, on the ground-floor. For the building only, the estimated cost was £8,000. If bath-rooms, heating apparatus, &c., were added on the basement, the additional cost will be £750. As it would be sufficient to provide 600 instead of 720 cubic feet per head, there would be a slight reduction effected by narrowing the building three feet; but the author proposed to leave this out, and, for the purpose of calculation, adopt the plan as it was. He calculated that £2 per head, or, say, £400, would provide what might be called permanent fittings, to be let with the buildings, such as shelves, bedsteads, firegrates, &c., and if a site could be got for £600, the total cost would be £9,000, which, at 5 per cent., would entail a rental of £500 a-year, with an allowance of £50 a-year for repairs. If the site should exceed this cost (that of the Albert-chambers at Mile-end cost £650), it might become necessary to add another 3d. per night to the rental of the rooms. The question was, could a tenant be expected to undertake the management of such a building with a reasonable prospect of profit? The author inclined to think so. His balance-sheet might be roughly estimated as follows:—

Capital Account.

	£	s.	d.
220 sets of bedding	300	0	0
Other utensils	100	0	0
	400	0	0

Income.

	£	s.	d.
204 beds, at 2s. per week...	1,060	16	0
16 „ 3s. „	124	16	0
	1,185	12	0
Deduct 10 per cent. for empties...	118	0	0
	1,067	12	0

Expenditure.

	£	s.	d.
Rent	500	0	0
Interest on capital employed at 20 per cent....	80	0	0
Rates and taxes	70	0	0
Gas, coals, water, ...	100	0	0
3 servants, at £30 a-year each	90	0	0
Soap and sundries...	20	0	0
Newspapers	7	12	0
Balance of profit for manager	200	0	0
	1,067	12	0

In the foregoing, Dr. Stallard said that his primary desire had been to prove the possibility of providing a building which, under fair management, should give the lodger the same sort of accommodation which was provided for the soldier, the convict, and the pauper, and to do this at the cost of 1s. per bed per week. If the expenditure had been estimated at £10,000, instead of £9,000, this would still be done, as 220 beds would yield £572 per annum at that rate. He was confident that a good manager would be able to pay the rent he had proposed, for in a vast majority of cases he would be able to make half-a-crown, or even three shillings per week of the sort of accommodation provided. Lastly, rather than forego the competition, even with lodging-houses at 3d. per night, he would consent to give up the important point of cubic space. Mr. Snell informed him that by doing away with the corridor, and putting the kitchens half below the ground, the building might be narrowed to 23ft., at a saving of not less than £2,000 on its cost. This estimate was supported by the cost of George-street. This would give 400 cubic feet to every occupant, and would enable the tenant to realise a larger profit at 3d. per night than under Dr. Stallard's plan at 4d. It appeared to him, therefore, that a cautious execution of the plans he had proposed would enable them to compete successfully with the wretched, filthy, and ill-ventilated apartments now in use. In conclusion, Dr. Stallard said that as premiums were offered for model farms, in the same manner he thought it would be a most desirable thing to issue premiums for the best-conducted model lodging-houses, not conducted by servants of public societies, but by private individuals. He also thought that if some portion of the Peabody Fund could be directed to this lower and simpler mode indicated by him, it would really render an immense service to the poor of London.

In the discussion which followed,

Mr. **Fletcher** asked in what way the down draught was effected by the zinc roof spoken of—whether it was really prevented; and said he did not quite understand what amount of light was got into the private rooms shown on the plan. They seemed to him to be some 30ft. below the roof, and only to have a borrowed light.

Mr. **Espinasse** thought that the only way to get over the difficulty would be by the assistance of the Government, not by building such houses out of taxes, but by using the savings of the working classes, which were now deposited in savings banks at 2½ per cent.

Dr. **Hardwicke** concurred heartily with all that had fallen from Dr. Stallard. He himself had brought forward a scheme for public dormitories three or four years ago, very much on the plan now suggested, and he thought it would be not at all difficult to show that all local authorities, corporations, and parishes ought, in some manner or other, to provide in every district some such accommodation. Some years ago, Professor Kerr, of University College, introduced a plan of single large rooms, 16ft. square, for families, which could be let for about 3s. 6d. a-week, giving a large amount of cubic space for the family, which was very essential, and though it was but one room, still partitions might be erected so as to provide for decency and comfort in every way. This subject came daily under his notice as medical officer for the district of Paddington. For instance, a man and his wife with three or four children, or even more, were found living in one room. There was no power to compel them to have two rooms, and yet they had, perhaps, only 150 cubic feet each. The results were perfectly horrible. He believed that consumption and tubercular diseases generally, such as the wasting of children in early life, scrofulous affections, and so on, were quite as easily preventible as zymotic diseases by a proper condition of the air. He believed that what had been done in the way of charity had frightened capitalists, and prevented their entering into building speculations, it being a general notion that such enterprises would not pay. This, he believed, often arose from the needlessly expensive manner in which they were erected.

Mr. **Carter** said he had hoped, from the title of the paper, that it would have had some reference to the nefarious practices of speculative builders, who ran up houses merely for sale, and that some recommendations would have been included in it for an alteration in the Building Act such as should compel builders not only to make walls of a certain thickness, but to construct them of proper material, for it was impossible to construct any building economically unless it was well constructed in the first place. A great deal more might be done by private effort. He knew of a private individual who was now building small houses at Stratford, of four rooms each, with small gardens, at a cost of £115, which would be let at 6s. a week, free of all taxes.

Mr. **Vigers** said that he had been rather surprised, as a practical land-surveyor, to hear that building model lodging-houses had been financially a success. Where they had been so, it was not where they were built for what might be called the poor of London, but for thrifty working men. Those companies which were held out as being successful would not take a man as a tenant unless he was receiving from 25s. to £2 a week wages. What was wanted, however, was accommodation for the labouring men who earned not more that £1 a week, and it was possible to provide this, but it had not yet been done profitably. The trustees of Mr. Peabody's trust, to which he was consulting land-surveyor, made it a rule to admit no one who earned more than a guinea a week. They were doing great good by providing decent accommodation for this class, and they never distressed a poor man if he was in a temporary difficulty from being out of work, but treated him with every consideration. The paying companies, on the other hand, if they had a tenant who could not pay his rent, either turned him out or seized his things, and this system of working made all the difference in the result. His clients were most anxious to do the best they could, and if any one would kindly communicate any plan which promised to be of service to the working classes of London, he had instructions from Lord Derby, the Chairman of the trustees, and his colleagues, to thoroughly examine it, and lay it before the Committee, when it would receive the most earnest attention.

Mr. **Allen** said he could give the results of his practical experience in the matter, being the builder of houses erected by the Waterlow Company. It was quite a fallacy to say that such buildings did not pay. He must correct one statement made by the last speaker, for the company never seized, and yet they let their rooms at a lower rent than those in the Peabody-buildings. Yet the company had always paid a fair dividend of 5 per cent., with a good working staff, well remunerated. He was now engaged in providing healthy and well-ventilated homes for working men, with all necessary comfort, to let at a rent of 2s. per week per room, free of all rates and taxes, and this under a ground rent of £1 per foot frontage, or 6d. per foot super. In his opinion charity had done more mischief than enough in this matter, and it would have been better for the poor of London if Mr. Peabody had buried his money. The opinion had got about that a working man's house could not be built so as to pay; but the farther you got from charity the nearer you got to justice. He was at that moment engaged in building houses for the working men to the extent of about £40,000, and at about half the cost of the Peabody buildings, and, what was of the greatest importance, the company never attempted to give the joint use of anything, but in each tenement provided all that was necessary, so that each tenant had a home of his own. Other people might build houses, but his object was to provide homes, for, small as it might be, an Englishman liked to have a home on which he could turn the key and feel himself master of. He had lettings as low as 4s. a week, for which was provided a nice room, a bed-closet, and a little wash-house with a sink, and every domestic convenience. In the Peabody buildings there was no such thing; in fact, they did not provide homes at all. He had worked it out practically, and found it could be done; but still the help of the Government was required in order to carry out the idea thoroughly. As for the term "model lodging houses," it stank in the nostrils of Englishmen, and he had always set his face against it. The system of building eight or ten-roomed houses, and then putting four or five families into them, ought not to be allowed; it was the root of all the mischief. It was much better to build a large house properly constructed, but it was necessary to go six or seven stories high. It took one story to pay the ground-rent, and another to pay the rates and taxes, so that you were bound to carry them high, but there was no objection to that; indeed, the upper stories let first. He would add that the company had only built two blocks in which an attempt was made to accommodate a lower class of tenants by letting so many have the joint use of the wash-house, and he had been engaged that afternoon in making out a contract to alter them and make them into distinct houses, for they would not let as they stood.

The **Chairman** (the Earl of Shaftesbury), in the course of a long speech, said he was astonished to hear from the gentleman who represented the Peabody lodging-houses that the principle upon which they went was not to demand the rent in case of persons falling into difficulties. That was all very well for a private proprietor, and it might be a matter of Christian feeling so to act, and if they chose to put the Peabody buildings upon that footing, well and good. At the same time, did not that constitute these great buildings mere eleemosynary institutions—the very last thing they wished the workman to be subject to? He did not think, however that Dr. Stallard had intended to raise a discussion on the wide question of lodging-houses and domiciles for whole families. His paper was confined to lodging-houses for single men. The rent was, under his system, still to be 2s. per week, and that sum could not be paid by a large proportion of the poor of London. Mr. Vigers had told them that the Peabody trustees wanted to get the poorest classes into their buildings, and that they would take any-one who had a weekly wage not exceeding £1; but that was a large wage for a great proportion of the people. There was another difficulty in respect of the lodging-houses for single men, and that might be one reason why they so often had a great number of vacant beds, and that was distress in trade. Whenever that took place, the lettings fell off very much indeed. In George-street, they had at one time from 30 to 35 beds vacant, simply because the men could not pay the rent. Workmen in London, and also in the agricultural districts, could not abide living by themselves; they infinitely preferred taking a lodging in a house where there was a family living. The difficulty was not so great for a single man as it was for large families. The great difficulty to be contended with was the necessity which existed for a large number of people living upon the spot near which their work was carried on, and the consequent necessity for making provisions for persons whose weekly wages would not endure to the extent of 1s. per week for the purpose of domiciles. That was a matter that would puzzle philanthropists and statesmen for many generations to come. Until they could find a set of men who were able to pay a larger sum for weekly lodgment, they would never get the improvement in the people's dwellings carried out on a large commercial scale. Now, there was one mode of doing it to a certain extent, but not fully. He was sorry that Dr. Stallard passed over in a cursory way, and with somewhat of contempt, houses which he said had been made habitable by adaptation. Really and truly this was the only way in which they would be able to provide for the great mass of the population of London, and if they would only take the trouble to go to Tyndall's-buildings, Charles-street, Drury-lane, and see the alteration that had been made by adaptation, and compare the state of these buildings with what they were before the society of which he was president took them, and also with the state of the courts and alleys around, they would find that, although they by no means approached to perfection, yet they gave decency and health. The rents were regularly paid, and the occupants were enabled to have a tenement of three rooms at a much less figure than would be given in other places for a home in only one room. They were enabled to do that because they had not spent a large sum of money—not having had to build from the ground. In conclusion, he moved a vote of thanks to Dr. Stallard for his paper.

Dr. Stallard, in reply, said he could not endorse all that had been said by Mr. Allen with regard to giving homes to single persons; it was all very well to say that they would be better off in married homes; but in many cases they could not do so; and there were about 100,000 single men in London living in lodging houses, which were barracks of the very worst discription. Barrack-life was the curse of a soldier's life, and the pecularity which he wished to introduce into these lodging-houses was that each man should have a chamber to himself. He was inclined to agree with Mr. Archer, of Westminster, that a single man could afford 4d. a night, or 2s. a week, for lodgings such as he proposed to provide, and he would be much better off then, if he only earned 10s. a week, than married men who got 20s. or 25s. and paid the rent required by the Peabody trustees or Mr. Waterlow's company. Government could help this object in one or two ways. He should like to see powers given to local authorities to take sites compulsorily for workmen's dwellings where such were absolutely required, in the same way as public companies took them away for their own purposes. He had not the least desire to find fault with the principle of adaptation, which was very good in its way, but it would never lead to anything like a proper standard of what was necessary, and he believed the houses so adapted were almost always dark, ill ventilated, and difficult to keep in order. The subject could never properly be dealt with on philanthropic principles. It must be made to pay in some way, even if the commonest possible buildings were put up—anything better than the wretched holes now used for lodging-houses. With respect to the question of down draught, if the wire gauze were sufficiently fine, any draught would be impossible; but of course with such an arrangement it was necessary to have a large surface in order to get sufficient air. With respect to the lighting of the private rooms, it was quite true that they only had a borrowed light, but he did not wish to lay much stress upon them, and his impression was that it would be better to keep the space open for other purposes. In conclusion, there was one other way in which the law and the public might help in this matter, and that was by more stringent provisions with regard to overcrowding. There was no doubt that the proprietors of the wretched lodging-houses in London reaped enormous profits, but he saw no reason to prevent the law stepping in to alter this state of things. If they were unwholesome, why should not the standard be raised? and if 300 cubic ft. were not sufficient, let it be increased. Nothing, however, would be of any use until corporations and guardians of the poor saw the impropriety of giving relief to people living in these wretched conditions. It was really the poor rates and charity which kept these miserable places open.

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BONES v. FLOWERS.

THE contractors, the Board of Works, or Mr. Ayrton—whoever is responsible—having been unwillingly compelled to cease using the bones of the plague-stricken who were buried in S. Martin's pits in 1666 as a road material for South London, have, with a praiseworthy disinclination to waste a good thing, distributed a few cart-loads in Kensington Gardens, where, during the past week, they have been picked up, submitted to anatomists, and duly recorded in the daily papers by indignant and poetic correspondents. One of these gentlemen compliments Mr. Ayrton on his wisdom in making "toys of the ashes of a bygone age, to instruct the youthful mind of the upper ten in anatomy and the worthlessness of human life." We can hardly believe that Mr. Ayrton would countenance the introduction anywhere of anything not practically useful, but are rather disposed to think his motives were the same that inspired him, according to the matchmakers, to attempt "to take away the flowers from Victoria Park"—namely, his usual desire to make himself as disagreeable as possible to everybody. Of course, it may be that Mr. Ayrton is not responsible for the distribution of skulls and other bones in Kensington Gardens; if so, we offer him the consoling reflection that a score of such unjust imputations could not render him more unpopular than at present—that is impossible.

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PROPOSED NEW FRUIT, FLOWER, AND VEGETABLE MARKET.

THE "patching-up" process to which Covent Garden Market is now being subjected is a miserable apology for the necessary improvements which ought to be carried out by the agents of the Duke of Bedford. None can wonder that the market gardeners and nurserymen, who are weary of the apparent disinclination of the owner to meet the growing wants of the public and the trade, have serious thoughts of deserting his market altogether.

Mr. Henry Meyers, the president of the Market Gardeners', Nurserymen's, and Farmers' Association, together with several of the other members, attended by appointment at the Guildhall the other day for the purpose of meeting the Markets Improvement Committee of the City of London, and fully explaining the requirements of the market gardeners with reference to the great need for improved market accommodation for the disposal of fruit, flowers, and vegetables within the metropolis. Mr. Meyers stated that the growers had for many years been making applications to the agents of the Duke of Bedford to construct a roof over the whole of Covent Garden Market, and make other really necessary improvements; but no steps had yet been taken. Under these circumstances the growers were glad to hear that the Corporation of London contemplated certain improvements and alterations in the City markets. Some of the members had expressed an opinion that the site in Smithfield near the new Meat-market would be most advantageous to both buyers and sellers; yet, after taking into full consideration the central position and great width of Farringdon-street, the Market Improvement Committee appeared to consider that by means of a judicious outlay in altering the present inconvenient levels and approaches, giving ample means of ingress and egress, and constructing a light roof over the whole area of Farringdon Market, the latter would be a source of more profit to the Corporation, and within a few years would rise from its present unsatisfactory state to the position of a really first-class, well-attended market. The deputation was courteously received by the Markets Improvement Committee, who went into the discussion in a business-like manner, and it was ultimately agreed that a sub-committee from the Markets Improvement Committee should meet a sub-committee from the Market Gardeners' Association to discuss and arrange the necessary details required either for the improvement of Farringdon Market or the erection of a new market opposite the new Meat-market.

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It is understood that the Stock Exchange will shortly be enlarged at the Hercules-passage entrance, the existing space being insufficient to accommodate the large number of members and their clerks.

ARCHITECTURAL PHOTOGRAPHS.

THE Architectural Photograph Society having been discontinued, for some time the profession has been obliged to content itself without any views of details of buildings taken specially for their advantage.

The failure of the attempts to do this work by the co-operation of numbers was due mainly to the fact that the photographers could not lose sight of the somewhat natural wish to please the majority of their subscribers by producing pretty views rather than architectural studies. Another difficulty which I have found practically important has been that the photographers had always mainly before them the paramount necessity, according to their ideas, of the photographs taken being perfect specimens of their own scientifically-mechanical work; whereas it often happens that an exquisite example of architectural detail is so situated that it is impossible to get a proper light thrown upon it.

Again, I have taken long and expensive journeys to distant places with photographers for the especial purpose of taking views of a building, and after arriving there the day has proved unfavourable, and no entreaties could induce my companions to risk their reputation by even attempting to obtain any negatives, so that the whole expenditure of time and money has been lost. Now, for the purposes of the profession this mechanical perfection is unimportant, and must be, at any rate, held to be secondary in importance to the procuring of negatives of the details required, which, if legible at all, can be reproduced or copied by other processes, and answer every purpose. To give an example. I have by me a photograph, which I value highly, of the entrance to the Chapter House of the Abbey at Romersdorf, taken under most unfavourable circumstances, after an amount of entreaty on my part which would have moved sterner hearts than those of my excellent companions on that occasion. The negative proved, as they expected, so indifferent that only one positive was able to be taken from it, but that was all that I wanted, and it could now be reproduced faithfully by the engraver or lithographer with ease. Again, I had toiled up with my friend to the top of the lofty hill above Cobern, on the Moselle, and found in the chapel of the castle on its summit a mine of architectural ornament. The camera and apparatus were left in the village, to be sent for if required. Unfortunately, the day was cloudy, and the interior dark, and though I pleaded almost with tears, saying that negatives of any sort would serve my purpose and help me to make the drawings I proposed, I was unable to prevail, and that journey was rendered comparatively useless.

Now one cannot but highly appreciate the true artistic feeling displayed by these photographers; it is so akin to that jealousy which good architects and artists always entertain of allowing any work of theirs to be put forward which they feel to be not up to the mark. Still we, as a profession, do not seek for pictures in their representations of details, and would prefer to have some upon which we can rely for all the points we care about, rather than none at all. Such difficulties and disappointments as I have sketched out have hitherto tended to discourage the production of the peculiar class of photographs which architects desire.

I am glad, however, to say that a young architect of my acquaintance, who has made himself an able photographer, and who possesses a first-class apparatus for the purpose, has undertaken to devote himself to this work, and he writes to me that he has arranged with a Mr. Herbert Cruz, of Much Wenlock, for the disposal of the results. "All the photographs," he says, "will be specially selected as good architectural studies." (And here I may remark that he is a perfectly competent judge in such matters.) "Where possible, geometrical views as nearly as possible will be obtained, and preferred to sidelong or perspective views. A doorway or window may be photographed from the centre of the opening, and the resulting photograph is equal to a measured drawing, if only one dimension is figured on each print to give scale to the whole. All the prints will be sold unmounted at the uniform price of one shilling each, the sizes varying from 12 by 10 inches down to cabinet size. Up to the present, photographers have only taken general views, but I shall confine myself almost altogether to details which cannot fail to be valuable to the profession, and deserving of support on account of the low price charged." A considerable number of prints have already been taken from the best portions of Hereford Cathedral, and from that architectural *bijou*, West Walton Church, Norfolk, together with fine Early details from Acton Burnell, Salop, Goodrich Castle, and other places, many of which were selected at my request. John P. Seddon.

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HEATING BY HOT WATER.

Mr. ALFRED SMEE, in a communication made to the last meeting of the Royal Horticultural Society, makes some remarks on heating by hot water which will interest all concerned in heating by that means. Mr. Smee says: "Having to draw up some remarks upon the circulation of water in hot water pipes, it occurred to me that the flow and return might be managed by the use of a single pipe, instead of two, as now universally adopted. I directed the experiment to be tried by affixing to the socket end of a 4in. pipe an inch supply pipe from an ordinary boiler, and a second pipe communicating with the bottom of the 4in. pipe and the bottom of the boiler. As I expected, the circulation was most perfect and rapid, the hot water flowing along the upper surface of the pipe, and the cold water returning along the lower surface. Two currents in opposite directions were created in the pipe, and the action was so perfect that I ordered a frame to be fitted up forthwith, which has been in operation ever since. This mode of heating by a single pipe may be, no doubt, of frequent use, and manifestly, from the simple and portable nature of the apparatus, the arrangement will commend itself to the attention of horticulturists. But engineers whom I have consulted considered that the plan could not possibly answer; and having occasion to write to the eminent hydraulic engineer, Mr. E. Easton, I put in a postscript :—'Can you circulate water in a single pipe? I can.' He replied that, by accident, a single pipe had once been arranged by one of his pupils, instead of two, and this, to his surprise, was found to answer. After having my arrangement explained to him, he stated that there were many cases in which he should adopt it. With this exception, every practical engineer has considered the plan impossible; nevertheless, it is most easy of construction and perfect in action, and I commend it strongly to my brother horticulturists in all cases where a single pipe is sufficient to communicate the necessary heat."

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PILTON, NEAR SHEPTON MALLET.

THIS fine parish church was reopened for Divine worship by the Lord Bishop of the Diocese, on Thursday, the 20th inst., after a complete restoration at a cost of £2,300. The works have been fifteen months in hand.

The church consists of a nave, north aisle, chancel, and south porch, with tower at west end, of various dates of architecture, from Norman to Perpendicular. The rich and elaborately carved oak roofs, of the latter style, have been perfectly restored. The church was in a deplorable state, covered with whitewash internally in every part, and rough-cast externally; completely blocked up with galleries, to obtain access to which the walls of nave and aisle had been cut through, in one case destroying a Norman arch, another, a window. The body of the church was filled with box seats facing all parts of the compass.

The whole of the pews and galleries have been swept away, the church reseated with pitch pine open benches, walls re-stuccoed internally, repaired, and re-pointed externally. The church has been repaved with Doulting stone in diamond squares; and new pulpit and font in Bath stone have been erected. The south door, of Norman date, with zigzag mouldings, has been carefully restored; and the north door, which is of Early English date, has been reopened, after being blocked up for years. The lower stage of the tower is of Early English date, with a fine lancet window in the south wall, which was found blocked up half its height, has been opened out and restored.

In the south wall of nave the remains of a Norman "stoup" were discovered on removing the plaster, and considerable portions of Norman mouldings, &c., were found to have been used in building the walls of the Perpendicular date.

In the north wall of aisle, under a recessed arch, ornamented with the ball flower, is an incised stone slab, a floriated cross with face in centre. This had been removed from its original position, but has now been carefully replaced, and remains of wall painting were discovered on the north wall of aisle, and on several parts of the stonework, on removal of the whitewash.

No contract was taken for the works, but they have been carried out by a staff of workmen under Mr. Creed, the Clerk of Works, the architect of the restoration being Mr. A. E. Gough, of Bedford-square, London.

The chancel was undertaken by the Ecclesiastical Commissioners, and under the superintendence of their architect, Mr. Christian.

Pilton was formerly the summer residence of the abbots of Glastonbury (it is about six miles from Glastonbury), and the manor-house, adjoining the church contains remains of Mediæval work. It is also known for possessing a fine Mediæval barn (scarcely second to Glastonbury), and of very similar design (poorly illustrated in Parker), with the four evangelistic symbols carved in the gables, &c. The church is most picturesquely situated on the side of an abrupt hill, grouping with the barn and manor-house, and justly considered one of the finest in that part of the county.

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ASPHALTING GARDEN WALKS AND STREET PAVEMENTS.

GAS-TAR is not soluble in water. Make a note of this, for it is the chief point in asphalte works—roofs, tanks, walks, roads, and the like. As well might you attempt to mix tallow with water as gas-tar with water, and hence the importance of all articles being dry that have to be united with gas-tar. Now, when you get lime from the kiln (says a writer in the *Gardeners' Chronicle*), and slack it nicely by adding a large amount of cold water to cold stones of lime, the mixture will neither be cold nor wet, as one would think it ought to be, but fiery hot and apparently dry; yet there is no disputing the fact that into this dry powder you certainly did pour real water by the gallon, and it must be there now in some shape. Chemists tell us that when fluids assume the solid form heat is evolved, and although we may not recognise the presence of water, the gas-tar will; so that in all cases where slacked lime is mixed with gas-tar it is a grave error, for water is there, and "gas-tar is not soluble in water." But if you wish to get at the secret of asphalte making, pound the new lime and pass it through a fine sieve, and mix this with coal-tar, and see the result. The writer was shown a large factory that was roofed with paper and covered with gas-tar and lime in this way. The owner had previously tried the slacked lime and wondered at his failure. The intelligent workman will boil his gas-tar to get any moisture out of it, and having his pounded lime ready, he can add to suit his circumstances. The composition of bone is the point to be aimed at, for the bone-earth by itself would be hard, but not tough, and the gelatine would be tough and clammy, but not hard; mixed together in due proportions, they are perfection.

Mineral pitch used in paving is very well for street work, but when the sun is powerful it is quite fluid; not so is the pitch when lime has been added, and as a small sample tried will give the proper proportion, there can be no excuse for having melted pitch adhering to the shoes of the passenger. Lime is able to do the master-stroke, but it must do it in its own way. If the carriageway or footway is to be a permanent way, its levels must be rigidly set out first, and good hard materials used to make up the levels; white fine dry gravel, pebbles, or cracked stone, may be tarred and levelled and rolled just as would be done if no tar were used; but when the stone or gravel is tarred they absorb none, whereas the lime has united with the tar, and the compound is quite different from either of its parents. We see constantly about any of our large towns heaps of cinders and clinkers (scoriæ) being mixed for making footpaths, the gas-tar poured on or over at random, the finer parts being left to make a smooth finish. This is good enough for parish business, and is, moreover, cheap, but whoever has seen first-class asphalting in London and elsewhere will allow that it is very nearly all that could be desired for walks or roads.

CHARACTERISTICS OF EXETER CATHEDRAL.

THE Ven. the Archdeacon of Exeter delivered a lecture on the "History and Characteristics of Exeter Cathedral" last week. In concluding his lecture, the Archdeacon said that some of the characteristics of the Cathedral are its transeptal towers, its bi-lateral symmetry, the unbroken vista of its vault. Another characteristic is its unusually uniform and apparently studied numerical treatment. This is seen in the height, length, and breadth of the nave and transept towers, each of which, as given by Mr. Hewitt, is 140ft. Like the New Jerusalem in the Revelation, "the length, and the breadth, and the height are equal." Very unusual, too, is it, if not unique, for the nave and choir to have, as here, the same number of bays, and that, too, the mystic, and in cathedrals uncommon, number of seven. And so nearly exactly in the centre is the great middle boss of the transept (bearing, it seems, the figure of the Black Prince) that if an axis were let down from it, and the whole cathedral turned round upon it, the great east and west windows would, as nearly as possible, take each other's places; as of course the north and south transepts would. Another and chief characteristic is the perfect unity of style in the interior as it exists, marred only by the introduction of the east window. It is, perhaps, the only cathedral in England in which you can take up a point of view (viz., at the east end) from which you behold one style prevailing throughout, and that, too, the most perfect style, the Decorated. Salisbury is still more completely of one style, but that is Early English. The supreme and most glorious characteristic, however, of the cathedral is its architectural harmony, in which respect, perhaps, it cannot be matched in the world. The pillars and the vaulted roof exhibit an immense and almost unexampled multiplication of regular and rhythmical intervals. Each of the thirty marble pillars is sub-divided into sixteen minor, but still massive flutings: 480 in all, of which half, *i.e.*, 240, are visible at one time. But it is in the vaulted roof that the most astonishing effect of this kind is realised. The earlier roofs of Chichester and Hereford are simpler; and later ones, as of King's College Chapel, show what may be done by a rich and mazy pattern. But in the vault of Exeter, the rhythmical repetition of parts reaches its acme. Each of the fifteen compartments exhibits twenty-four facets, so to speak, at a certain angle to each other. Bold groining ribs divide these facets from each other, and are themselves so moulded as to present each one fifteen different surfaces, with intervening hollows to the eye. There are, therefore, nearly 6,000 surfaces in all, half of them visible at once, every one rhythmically placed, and affecting the eye with an agreeable impression of light and shade.

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EXETER DIOCESAN ARCHITECTURAL SOCIETY.

THE quarterly meeting of this society was held at the College Hall on Friday week, the Right Hon. the Earl of Devon presiding. Among those present were—The Ven. Archdeacon Woollcombe, Rev. Canon Cook, Rev. Prebendary Barnes, Rev. P. Williams, Rev. H. Tudor, Rev. G. W. B. Wills, Messrs. H. S. Ellis, H. Ford, and Hayward (2). The Hon. Secretary (the Rev. J. L. Fullor) read the quarterly report, which stated that since the last meeting the following plans had been considered by the Committee :—1. For re-seating and re-arranging the church of S. Dominick, Cornwall, but as the plans were not sent in at an early stage, a grant had lapsed, the necessary conditions not having been complied with. 2. Plans for re-arranging the chancel, and effecting repairs in the church of All Saints, Merton. 3. Plans for a new chapel at Lynmouth. 4. Plans for repairing the parish church of Down S. Mary. A grant had also been made to the Rev. J. B. Strother, towards repairing and re-fitting of a portion of the screen heretofore in S. Mary Major's Church, which is to be erected in the church of S. Mary Steps, and also a grant to S. Enoder, Cornwall, for replacing some of the fine old carved seat-ends of that church. The report then went on to detail the steps taken by the Committee with respect to the contemplated Cathedral Restoration, especially with reference to the efforts made to induce the Dean and Chapter to reconsider their decision to retain, in its present condition, the screen between the choir and the nave.

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The dinner of the Artists' Benevolent Fund, on Saturday, presided over by Captain F. Egerton, M.P., was remarkable for the agreeable innovation of the presence of ladies. The principal speaker was Sir Francis Grant, President of the Royal Academy.

WATER SERVICE OF DWELLINGS.

THE comfort of the occupants of a house is dependant to an extent that can scarcely be over-estimated upon the thoroughness of the manner in which the work of the plumber has been contrived and carried out. Unfortunately, much of the most important part of the work is hidden from sight, so that the honesty of the mechanic has to be taken upon trust; whilst there are few houses, however badly built, but that appear "all right" for the first few months. In renting or purchasing a dwelling, therefore, no part of the whole is so difficult to be sure about as the character of the plumbing. The quality of the water supplied by public companies to all large towns is a matter to a certain extent beyond individual control; and yet there are means whereby objectionable properties may be mitigated or changed, and these are well worth a little practical attention, as the first step towards securing the full benefit of the sanitary blessing of good water. Rain water is the most pure, and when filtered is the best for domestic purposes; the water, therefore, that most nearly approaches to this, such as would be derived from uncontaminated brooks and surface deposits, is, generally speaking, the best that we can obtain. To fit it for universal use it should be always filtered, not only before admission into the mains, but also in every house, and to do this effectually a self-acting constant process is the only one that is of any use. The cistern, therefore, from which the general supply for culinary and table purposes is derived should be divided, and the water made to pass through a bed of fine sharp well-washed sand and grit before being drawn off at the usual tap over the sink. This, observe, is only for the purpose of arresting the material deposits and impurities that the water may contain; for the destruction of organic matter and of injurious soluble particles the aid of chemistry must be called in. Practically, nothing will be found so certain, so harmless, and so easily applied, as every morning just before the water is turned on from the main (this, of course, referring to an intermittent, not to a constant service) to pour in a small quantity of Condy's disinfecting fluid, which, for convenience, may be first diluted to one-half its strength, one bottle making two, and then from half an ounce to an ounce of the reduced fluid poured into the larger or open division of the cistern. By this means the slight discolouring of the water by the fluid will have been taken up before it can be drawn from the tap, and the water will run off clear, bright, and as nearly pure as any ordinary process short of distillation and the use of chemical reagents can make it. It should be remarked that the cistern should always be as nearly as possible completely emptied each day before the fresh supply comes in, and if a servant be encouraged to make this a special duty, the little time it will require, as also to pour in the disinfecting fluid, will soon cease to be felt as a trouble. The superior facility with which culinary operations will be carried on, especially in the cooking of green vegetables, leaving them of good colour and removing the unpleasant odours generally attendant, will alone repay the extra time required for the process described. When water is of disagreeable hardness, the filtering and disinfecting process will be found equally a remedy, although in extreme cases it may be desirable to mix a small quantity of diluted lime water in the cistern about once a week. The remedy, however, for impurities in the water is literally at the fountain-head; the water should be filtered and chemically freed from all impurities before it is allowed to be admitted into the mains, and the supply should not only be constant, but what is called high service—that is, it should be driven at such a pressure as to rise to the highest floor of any building in any neighbourhood. When this is done all the costly imperfections of cisterns, ball-cocks, and the like, will be done away with and more than half the plumbing work will be saved. What will remain must also be of good quality of material, and the work well done, as it will have to be submitted to a test by disinterested examiners before the water will be permitted to enter from the main. Tanks and cisterns in poor houses are fertile sources of disease and death, and even in better class dwellings are no less dangerous. Witness the recent lamentable poisoning of a clergyman's family at Weymouth by the careless use of water from an uncleansed tank, in which the stagnant fluid was farther poisoned by the decaying carcase of a rat. Dead rats and mice are constantly to be found in cisterns, especially in those for the supply of water closets upstairs; and when, as is often the case, a housemaid's sink is supplied therefrom, and a tap is added to fill water jugs and toilet bottles, the danger is brought home to every householder. In all cases a cistern should have a movable wire cover to keep out such deadly intruders, and it should be examined and emptied at least weekly, and a little Condy freely used. In mentioning this disinfecting fluid it may be well to state that for such purposes it is thoroughly useful, and is so harmless as to be used almost universally on board ship for purification of the drinking water; for removing bad odours, and for neutralising poisonous gases of drains and sewers, careful examination of its effects has not given results so entirely satisfactory, but for water it is most valuable.

Having secured a good supply of purified water, the first thing is to be certain that the house drains are properly connected with the public sewer, and are carefully levelled and trapped. This is not a matter of course, as surveyors can only too assuredly testify, easy as the rules may seem. The point of gravest importance is that the house drain discharges into or near the top of the sewer, and that it has a sufficient fall. The next essential is that, where possible, the soil pipes from the closets should be made to discharge into the drain near to the outlet, so that the surplus water from roofs, surface, sinks, and the like may be admitted behind them, and thus carry off any deposit. The drains should be of glazed stoneware, and never less than six inches in diameter. The head of the drain should be trapped, and every separate inlet into it should also be provided with an efficient trapping apparatus. Above all things it should be insisted on that the house drain is so laid as to be easily got at, and if it is constructed of glazed stoneware, laid carefully, with covered removable openings in one or two lengths, a brush or rake fitted in size to the interior can easily be introduced for the purpose of removing an obstruction. A word of advice is offered as to the objectionable practice of sinking basement floors so much below the surface of the ground; this necessitates laying the drains, and consequently the sewers, at a great depth, adding enormously to the expense of construction and to the difficulties of removal of their contents, and in London is the cause of most of the present evils. In all new neighbourhoods, no sinks or water-closets should be permitted below the surface of the ground, and if occasionally unavoidable, and the kitchen and other domestic offices are obliged to be situated in a sunk basement, the sewage water should be discharged into the drain at or near the ground level; better suffer this inconvenience than incur the risk of poisonous exhalations by attempting to connect at a lower level. All these important points being satisfactorily adjusted, it must be remembered that to work well the drains must be kept well supplied with water, for if the traps are allowed to become dry they cannot act, and poisonous gas will rise from the sewers and permeate the house. The plan of emptying cisterns daily is, therefore, if only in this respect, a very good one.

The pipes that convey the water through the house should be of good size; better have one too large than too small, for it is the tap, not the pipe, that regulates the volume of the stream. A bad custom prevails with us of covering up and concealing our service and waste-pipes, so that when an accident occurs the wood work or walls are injured to get at the pipe; better by far make them so cleanly finished and well-arranged as to be ornamental in themselves, and keep them always in sight. Then, when a leak appears, its effects will be seen at once, and often all injury may be prevented. The pipes should, as far as possible, be carried upon inside walls and partitions, to avoid injury by frost, and, as an excellent precaution, should always be so laid that the water cannot lodge in any part; by this means a tap at the lowest level will always empty a pipe, which is a precaution sometimes most valuable in severe weather. It is not unusual to see the rain water leaders brought down from the gutters of the roof into a soil pipe, and this plan is sometimes recommended because it affords a means of flushing the soil pipe, and, by its superior height, is supposed to act to some extent as a ventilating shaft to the drain. On every score it is a most pernicious practice, and should not be allowed. In winter there is the danger of the solid contents of the soil pipe lodging in their passage, and then, should rain fall in the gutters, there is no escape for it but into the house through the syphons and waste pipes, causing serious damage and annoyance, whilst in hot dry weather the escape of foul air above the head of the water pipes easily becomes a source of evil by finding its way into upper rooms. When a soil pipe is carried on the outside of a building it should be covered by an earthen pipe of large diameter, which will be an effectual prevention against frost. The woodwork of all water-closets should be so put together as easily to be taken apart without injuring the walls or skirting, and the underside of the seat should be roomy, so as readily to adjust or repair the apparatus. Of the apparatus itself it may briefly be said the simplest is the best. So many patented contrivances exist that it would be invidious to select, but for the trap and basin glazed stoneware in one or two pieces is the best. Plenty of water is the obvious means of preventing effluvium; as a disinfectant nothing appears so useful as McDougal's powder, which is sprinkled from tin canisters having a perforated head.

The fittings of a bathroom cannot be too simple; the less casing and wood-work the better; in fact, the bath looks better, costs less, and is more easily kept clean and in repair, if standing by itself. It should always have a light-hinged flap or cover, to close down upon it when not in use. For hot water, a gas heater attached to the bath itself, will, if properly made, be found the least costly mode of obtaining a supply. The simplest application consists of a boiler with gas ring below it, and a zinc wire gauze between it and the bottom of the boiler. In the boiler are no openings, excepting a pipe top and bottom, communicating with the bath, which when required to be used must be filled with cold water, and the gas lighted; as the water heats in the boiler (fed as will be seen from the bath itself), it will circulate throughout the bath, and will soon rise to the proper temperature. The top should be closed upon the bath to retain the heat until ready for use. Where gas is not convenient, a small fire-plate heating a boiler in precisely the same manner will supply its place. When the levels will permit, it will be found preferable to let the waste-pipe of the bath discharge into the pan of the water-closet, or into a housemaid's sink, than to connect it with the soil-pipe, as unless the water of the bath is frequently used, the trap may become dry, and foul gas find entrance into the house. The housemaid's sink is too often a serious offence, instead of being, as it should, a great convenience. The only safe rule is to make it of enamelled ware, not lead, and to line every part of it, floor, sides, ceiling and back, with glazed tiles. Even these precautions will be insufficient if a servant will carelessly leave wet clothes, and the like, in a corner: so for these, a glazed jar or pan with a cover should be placed, and then no offensive odours will escape. Especial care should be taken that the trap to the sink of the housemaid's closet is large, and not moveable; a rising cone of perforated copper is the best cover, and this should never be allowed to be taken off.

The rules, then, to secure comfort and cleanliness in a house in respect to its water-service may be summarised thus: Purify the water in the supply cistern; keep all house drains sweet and clean; have no sinks or water-closets below the ground levels; place all water and waste-pipes in full sight where they can readily be got at and any defect be seen; then, having done these things, keep a watchful eye over them all, and, to prevent danger in severe cold, turn off the water and empty the pipes at night. Experience will soon show whether this latter precaution is necessary, and the little trouble so simple a matter will take is amply repaid by the saving of expense and the freedom from annoyance and repairs.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. ZERFFI delivered the twenty-seventh lecture of this course in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. In commencing, he said that nothing could be more interesting than a study of symbols and myths; not from a merely technical, or mechanical, but from a philosophical point of view. In treating the subject, he intended literally to commence *ab ovo*, and would begin with the egg. This spherically-shaped, motionless, and lifeless thing, from which large or small living creatures crept forth, must have engaged the attention of observing mankind. Indian records told us that the invisible god, after creating the five elements and dispersing darkness, had created water, and had given motion to it. This motion had produced the golden egg, shining with the brightness of a thousand suns, and bearing within it Brahma, the creator of all things. According to the Phœnicians, Χρονος time, ποθος desire, and ομιχλη vapour, or fog, had produced the primitive egg. On the Euphrates the same egg appeared, where it was said to have fallen from Heaven into the river; it had been hatched by pigeons, and brought forth Venus, the goddess of love. To this might be attached the myth of Leda, which had originated in Egyptian lore, and passed to the Greeks and Romans. The egg-myth had produced the egg or tongue and ball and arrow ornamentations, which were amongst the most elegant decorations of Classic, Gothic, and Renaissance buildings. Passing from the egg to the serpent, we should find that this animal occurred in Indian mythology, and most distinctly in the Zend-Avesta. The serpent had been the symbol of Ahriman. It had also been the attribute of Artemis of Ephesus, and, as it was thought to have been one of the first products of the earth, had been made a symbol of Minerva. With the Egyptians, eternity had been represented by a serpent rising in an oblique arch, with its tail hidden under its body, thus having neither beginning nor end. These serpents had been called *Urœi* from the Coptic *Uro*, King; in German *Ur*, very old. With the Greeks this animal had also been the symbol of Chronos. In the Orpheic cosmogony water and mud had been the second emanations of the creative force, and these had produced the serpent, winged, and with the heads of a bull, man, and lion. This had been called Χρονος αγηρατος, time that never ages. Indians, Persians, Egyptians, Greeks, Hebrews, and Teutons had made endless use of the serpent. It was not surprising that it should have been employed in different windings in ornamentation. We had six celebrated casts from the Stosh museum. The first represented an eagle which stood on its right foot, round which a serpent was coiled. The eagle was in the act of raising its left claw to defend itself, whilst horror and anger flashed from its eyes. The whole composition was full of life and motion. The second was a kind of parody on this group, and represented a cock insolently treading on the tail of a serpent, and unconscious of the danger, defying his powerful antagonist with sparkling eyes. The third represented a stork bending down to devour a serpent. In this instance the serpent appeared as a means for satisfying the gluttony of a superior animal. In the fourth a bull was seen pursued by a serpent; strength succumbing to craft. In the fifth a warrior seated, with his shield by his side, is bending down to seize a serpent which is coiled round his right leg. The sixth was the group of Laocoon. Next to the serpent was the bull. This animal had from the oldest times been used as a symbol of strength and power. The worship of Mithras had been closely connected with the bull. Mithras had been fire, and the bull he had killed the earth, which Dshemshid had pierced with a golden dagger (allegorically referring to the introduction of the plough). The bull had also been the representative of matter. The creative sun entered the sign of Taurus after the spring equinox, and everything flourished. With the autumnal equinox, when the sun entered the sign of the Scorpion, the productive power of the earth died away. Spring was represented either by a tree or by a youth with a raised torch. Autumn was shown either as a tree laden with fruit, or an old man with his torch turned downwards. In the Persian cosmogony, Mithras and the bull had a still higher and deeper meaning. According to the Zend-Avesta, Abudad was the prophetic bull, and foretold the destruction of hell. Serpents, scorpions, and ants, which were the representatives and companions of Ahriman, had killed the bull. The dog by its side was the dog of comfort, which reminded it of Tashter (with the Egyptians, Sothis—Sirius—the Dog-star). The bull also served as a symbol of S. Luke. The mysteries of Mithras had had seven degrees, this number being taken from the seven planets. This number had been most important in the ancient world. Seven was the number of strings to Apollo's lyre; of reeds to Pan's pipe; of the days of the week; of the critical days in medicine; of the branches of the candlestick in the temple at Jerusalem; of years that Jacob had to serve for Leah, and afterwards for Rachel; of the ears of corn and the kine of which Pharaoh had dreamt; of the gods of Scandinavian mythology; of the cardinal virtues and the deadly sins; and of the sacraments in the Romish Church. This number had taken its mystic origin in the aspect of nature, as had also many other symbols and mysteries. This assertion was clearly illustrated by the bee. The bee was an extremely clean, sober, and diligent animal, and had been believed by the Egyptians to have sprung from the dying body of the bull, and hence was called by them bull-born. The moon, as the static or female principle of creation, had been called *μελισσα* the bee, by the Greeks. The bee in the form of a nymph, Melissa, had been also thought to have first prepared pure and wholesome food. It had served to represent allegorically cleanliness and sobriety, and had also been the symbol of the soul. The eagle, the hawk, and the griffin or vulture were all symbols of Indian, Egyptian, Persian, Greek, and Roman divinities. At the present day the eagle was the symbol of St. John. It had been sacred to Ormuzd, and had served Jupiter to lead the souls of heroes to Olympus. As a contrast to this the dove might next be mentioned. Whilst the eagle expressed might, daring, and, in fact, the dynamic force of creation, the dove, as the representative of the passive or static element, was the attribute of Venus and Adonis. Adonis represented vegetation in its innumerable forms. Doves had been sacrificed to him at the ceremony of burning his images, which commemorated his descent into hell. Adonis had also been Osiris and Horus. The dove had, with the Ancients, represented the spirit of Augury, and was found as a symbol of spirit and love in Assyrian, Phœnician, and Persian temples, and was to be seen on many tombs in the catacombs. The peacock had been the attribute of Juno, and was the emblem of pride both in ancient and modern times. The willow, as a tree of mourning, formed a link between older myths and our modern customs. Willows, shading the graves of the dead or drooping by the river-side, had been the abodes of nymphs, and shed their foliage into the running water as an emblem of time. The crab had been sacred to Astarte, and had also been the sign of the summer solstice. Astronomy and religion had been so intimately connected that it was not surprising that the primitive Christians should have used many astronomical symbols, together with the cross, to typify the sufferings and death of Christ. The position from east to west and north to south had represented the lines of the equator and the ecliptic intersecting each other. The A as celestial north pole, and the Ω as celestial south pole, and the division of the sacred body of Christ into twelve parts, corresponding to the twelve signs of the zodiac, were expressive of the higher and lower faculties of the universe. The lily, which had been an attribute of Juno, became sacred to the Virgin Mary. It was the emblem of innocence and purity. The rose and myrtle had been with the Greeks emblems of love and joy. The rose, by the Christians, was used to express pure and heavenly love, and the myrtle served to adorn brides at the altar. The tendency to speak through symbols had been inherited by Christianity from olden times. Symbolism, like the first imperfect sounds which fell from the lips of children, was abrupt and unintelligible, and endeavoured to express joy or grief by signs. The artists of this period, having lost the ground upon which the ancients had produced their works of art, and having been without forms in which to express the new order of things, had naturally had recourse to symbols to typify the spirit of their religion. For this purpose they had used the legends of India, Egypt, and Greece. All the attributes of Dionysius, Dewanichi, Rama, Hercules, Krishna, Osiris, and Horus had served to glorify Christ. The triangles of S'iva, Vishnu, and Brahma had been employed by the early Christian artists to express the Trinity, and the plans of Egyptian, Greek, and Roman temples had served both Jews and Christians as models for the construction of their own. We should, however, see that by degrees the symbols would vanish, as mankind at large became able to appreciate the beauties of Christianity. In conclusion, the lecturer drew attention to the great importance of the studies of comparative philology and comparative religion, which served to give a clear idea of that gradual and progressive development which had embraced art, language, religion, and civilisation in general.

The next lecture will be on the Early Scandinavian, Keltic, and Saxon monuments.

AMALGAMATED SOCIETY OF ENGINEERS.

A PRETTY true index as to the state of the engineering trades, not only in the United Kingdom, but also in Canada, Bombay, the United States, Turkey, France, and other countries, is to be found in the annual reports of the Amalgamated Society of Engineers. The 20th annual report refers to the improved state of trade, which has greatly augmented the society's funds. The number of members in 1850, when the society began its career, was 7,000. At the close of last year the number had increased to 34,711, and the branches from 80 to 324. During the year eight branches have been formed, one at Boston, Massachusetts, one at S. Louis, Missouri, and one at Atlanta, Georgia, and five elsewhere. The number of members is the largest ever on the society's books at one time, no fewer than 2,850 having been admitted during the year. The total income and the balance in hand amounted to £161,505 7s. $11\frac{3}{4}$d. One of the principal items of expenditure is the amount paid to unemployed members, their claims having absorbed no less a sum than £32,707. There has also been paid to sick members over £18,125, and for accidents over £1,600. The largest expenditure in any one year was £43,559 in 1852, during the noted lock-out. A summary of the ages of those admitted during the year shows that the members join early. Of the 2,850 admissions the average age is $24\frac{1}{2}$ years, only three persons at 40 having been enrolled. The amount of expenditure per member during the year was £2 5s. $6\frac{1}{2}$d.

ARCHÆOLOGICAL.

Discovery in the Guano Deposits of Peru.—An English engineer in Peru states that remarkable discoveries have been made in the lower excavations in the guano of the Guanape Islands. The guano appears to have preservative properties. Besides gold ornaments and other objects, a quantity of cloth was found, said to have paintings of animals and symbols, of which the colours were well preserved. The *Athenæum* doubts about the paintings and the symbols, because it suspects that the stuff was tappa, or stamped cloth, as in Polynesia, with which traces of intercourse have been found in Guanape. An early remittance of some of the objects to London is expected.

Roman Remains in Mark-lane.—A correspondent directs public attention to some Roman remains seen by him in Mark-lane. The relic in question is a portion of what appeared to be the curved summit of an arch of considerable width, formed entirely of *tesseræ* of clay about three-quarters of an inch in thickness. There was mortar under the *tesseræ*, several of which had been loosened. The form is arch-like, but it is possible that the surface was originally flat, and that there has been a partial sinking caused by time or accident. The part uncovered is about four yards wide and two deep; but there is no doubt a much larger expanse which is still uncovered.

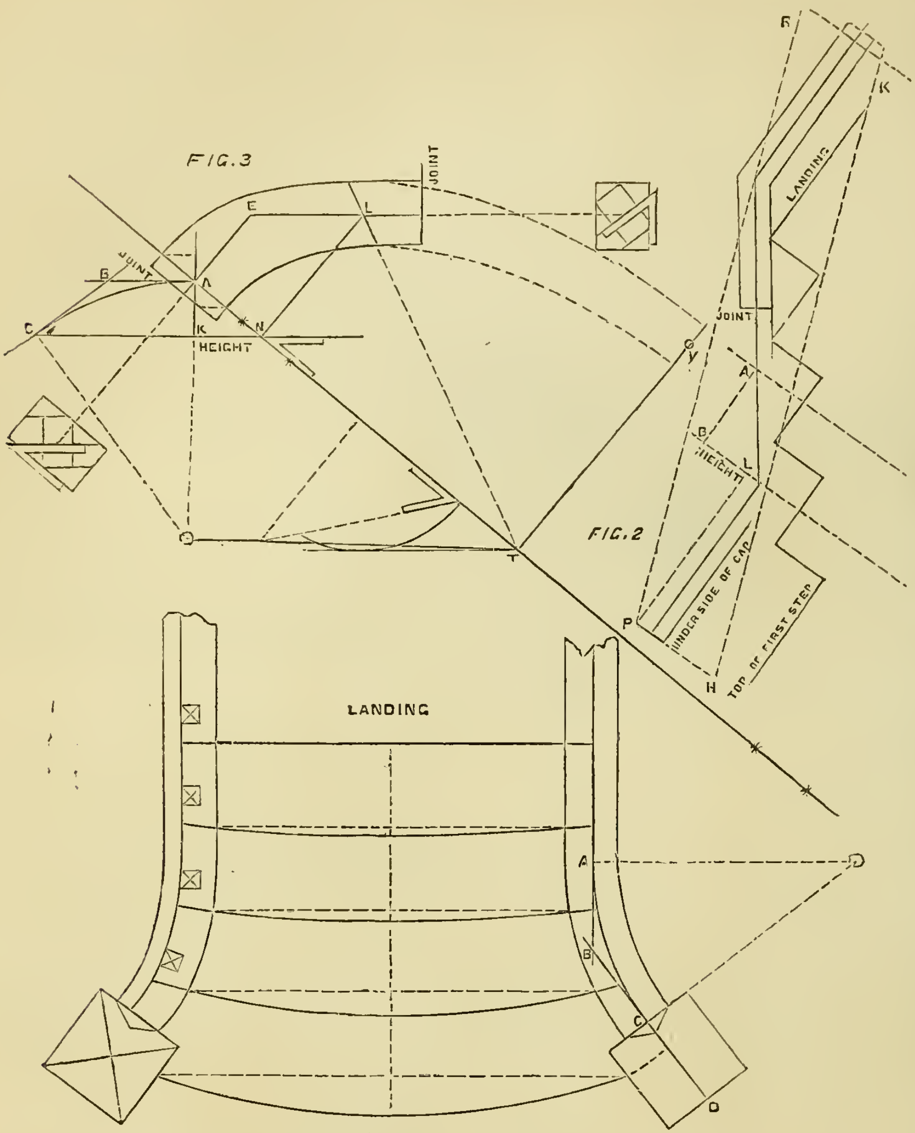

FIG. 1

NEW ELEMENTS OF HAND-RAILING.—PLATE XXX.

SKETCH OF DESIGN FOR NEW COURTS OF JUSTICE.

OUR readers are familiar with the history of the new Law Courts movement. They know how keenly the matter was contested year after year, and how it was at last decided to build the magnificent structure on the Strand site. After everything was supposed to have been settled, such as the clearance of the site, which cost three-quarters of a million of money, the exhibition of the competitive designs, and the selection of the architect, it entered into the head of some dreamy enthusiasts to overturn all the arrangements which had been made, and to shift the site from the Strand to the Thames Embankment. Had the Thames Embankment existed five years previously, the suggested change would have been well worth consideration. The suggestion, however, came too late. But Mr. Layard, as might have been expected, was fascinated with it; Mr. Lowe was more than half in love with it, because it was said the building on the Embankment would cost less than the projected one on the Strand site. Strange to say, the Government partially committed itself to the new plan, and Mr. Street, the selected architect, was instructed to furnish a new design for the contemplated new site. And we this week give, by the permission of the architect, a double-page photo-litho illustration of the design, as drawn by himself. For all practical purposes, however, the design, elaborate as it is, might never have seen the light, as a reconsideration of the matter induced the Government to abandon altogether the idea of erecting the new Law Courts on the Embankment. It is surprising that they even for a moment seriously contemplated such a thing. The only thing the nation now has for the serious expenditure of time and money caused by the Embankment site agitators is Mr. Street's elaborate design, now presented to the art public through the Building News.

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NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 278.)

Plate 30.—Outside Steps and Rails for Porch or Veranda.

FIGURE 1 exhibits the ground plan. Risers curved. Hand-rails six inches wide. Side curves not limited to any particular radius. For example: Assume line A O for radius. This gives A, B, C for tangents. That of B C falls level when in position. It is also the ordinate.

Remember the statement concerning the height of newels being regulated and determined by the situation and length of tangents on ground plan. This drawing further illustrates that point. For example: Suppose the angle of tangents, meeting at B, removed to the second riser; and the under side of rake-rail to measure two feet from top of step, and on a line with face of riser. Then it is clear that the height of newel is two feet seven inches from top of first step to under side of mitre cap. Riser being seven inches.

This is fully explained at Fig. 2, where tangent A B and steps are unfolded the same as those on plan.

Let under side of rail rest on square step. Set off half its thickness, cutting at L. Now observe the space between top of first step and under side of cap. This being added to height of rail gives that of newel. Tangent A B has determined this point.

Find the height of wreath by squaring over A B.

Fig. 3 shows the construction of mould.

Commence by making the right angle O A B to equal that on plan; having corresponding letters.

Let B C equal B A. Draw from C parallel with B A. Let K N, the height, equal that of B L on the right. Join A N extended.

Next, make O T parallel with C K. This done, square over T N A. Let A E equal A B. Make N L equal K C. Join E L. This line, to be correct, must equal pitch A L on the right. Let T V equal O C. Set off on each side of V half width of rail. Set off the same on each side of A.

Now find points to insert pins, and you are ready to strike the mould.

The bevel at N is applied to square section on the left. The projection of straight wood below A is equal to the mitre on the square cap.

This problem will be valuable to the mason who operates in stone. The rail being worked out of one block; it forming mitre, cap, and ramp.

To find the thickness of stone:

Let R K be the face of wall. Then make L P equal B D (Fig. 1). Draw P R so as to leave a curve on the ramp. Then draw H K parallel with it. This gives ten inches as the thickness.

The mould for this must be constructed to suit the pitch P R; and the line A L remains in its present position; that being the centre of wreath.

To curve risers:

Make two plough-grooves on the back, say 1½in. from edge. Then kerf.

Have two ribs made to the required curve. Force them into the plough-grooves.

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PRESERVATION OF ANCIENT REMAINS.

REFERRING to a suggestion made by a correspondent of the *Dorset County Chronicle*, that clauses against the destruction of stone monuments and similar ancient archæological landmarks should be inserted in leases, Dr. Chr. Cooke writes to that journal to say that the plan has been adopted by Mr. Forbes—the Laird of Culloden—in Inverness-shire; and doubtless, if generally adopted by landlords, many old monuments, even now, might be preserved, which, in the absence of such restriction, will cease to be visible before the end of this century. There seems to be some desire on the part of the Government to assist in such preservation, but not to advance money for the purpose. In Anglesea recently some remains were pointed out to the writer as being those of a cromlech which a prior tenant had destroyed in a "drunken spree." A fine cromlech at Mathey, in Pembrokeshire, and another near Marlborough, have been destroyed by the tenants since the Ordnance surveys were taken a few years ago. Other instances of Vandalism might be recorded, including the destruction of the Constantine dolmên, in the West of Cornwall—a national loss. From the *Gentleman's Magazine* of May, 1844, it appears that the late Sir Charles Lemon offered to purchase this relic, but the then owner demanded £500 for it. Landlords themselves, however, sometimes cause these monuments to be destroyed for building purposes, &c. It is most desirable, says Mr. Cooke, that ancient buildings, monuments, and their sites should be included in all the Ordnance maps, and archæological societies would confer a benefit upon posterity—as Dr. W. Boilase, Dr. Stukeley, and other antiquarians, have upon their posterity—by causing accurate drawings and photographs to be taken of notable buildings, cromlechs, kistvaens, pillars, encampments, &c., in Great Britain and Ireland

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Institution of Civil Engineers.—On Saturday evening the annual dinner of the Institution of Civil Engineers was held at the Hanover-square Rooms, Mr. C. B. Vignoles, the President, in the chair. Mr. Goschen responded for the Navy, Lord Halifax for her Majesty's Ministers, and the Earl of Kimberley for the House of Lords. The Chancellor of the Exchequer, in proposing the toast of the evening, expressed his opinion that the profession of civil engineering was perhaps the noblest that the world had yet seen. The right hon. gentleman, in speaking of the kind of education required in a civil engineer, deprecated too much attention being paid to ancient history, and advocated the imparting of a thorough knowledge of the power of natural forces, such as attraction and electricity, and of the way to direct and regulate them for the benefit of mankind

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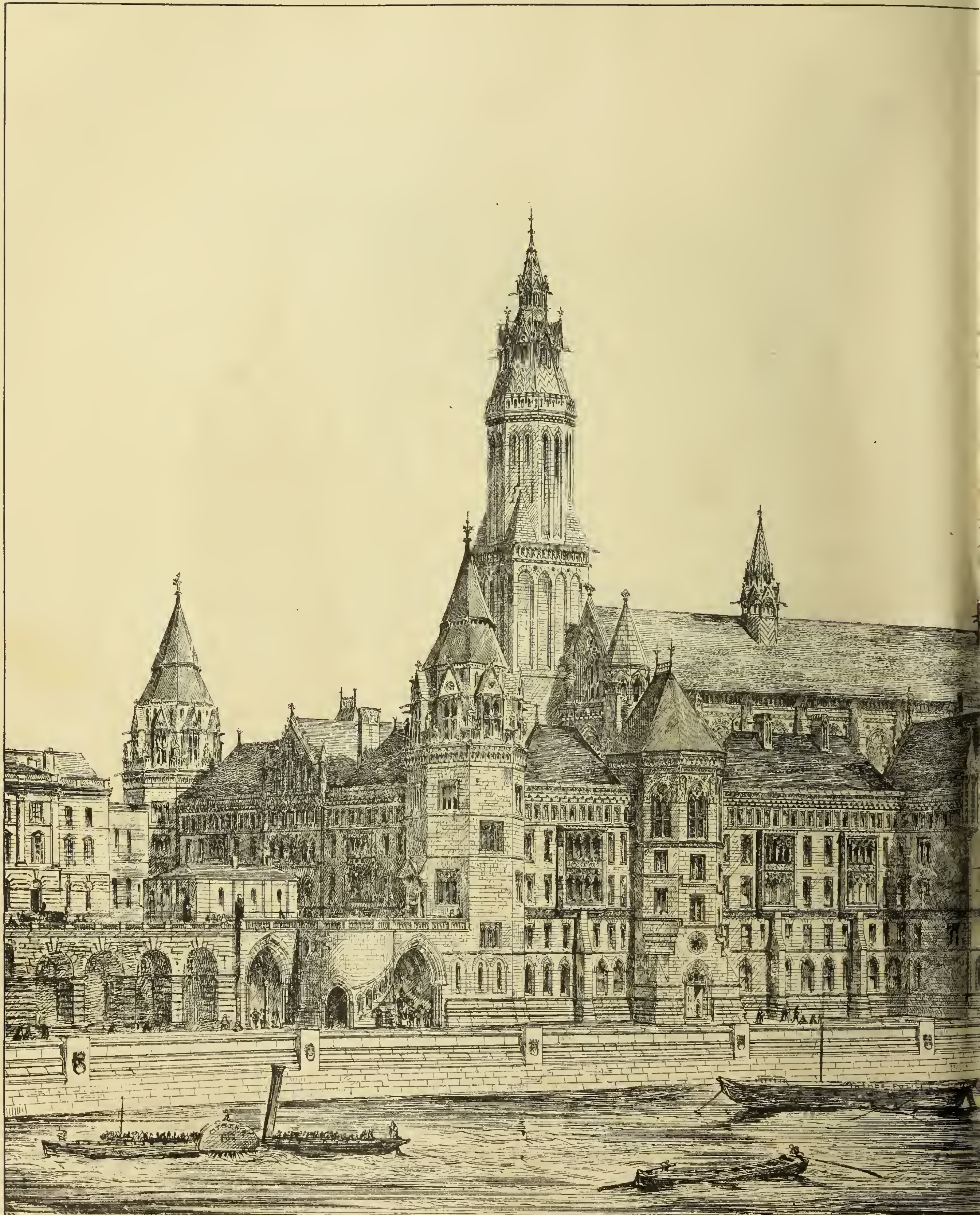
* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.



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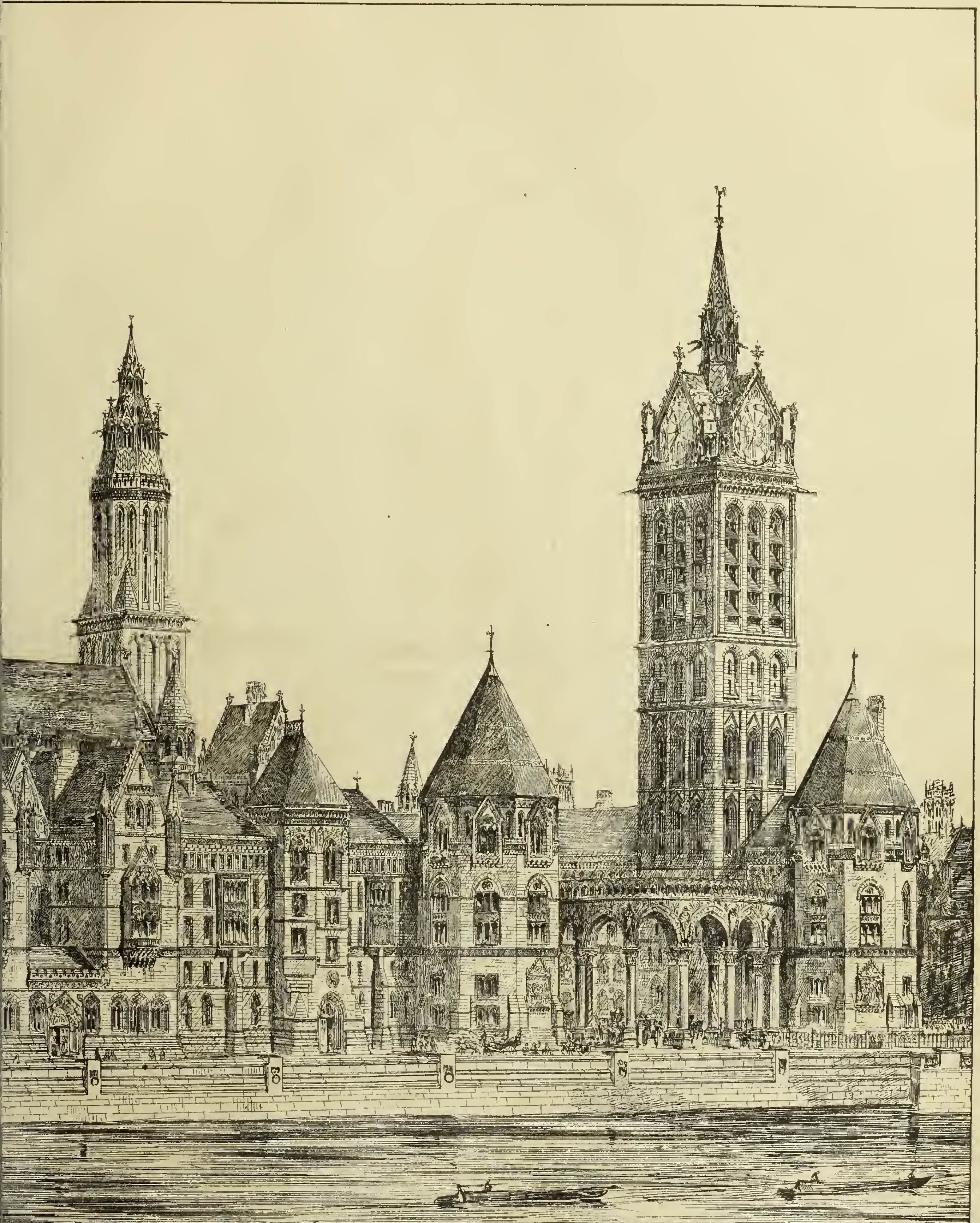

COURTS OF JUSTICE,

ES EMBANKMENT.

.R.A., ARCHT

THE ROYAL ACADEMY EXHIBITION OF 1871.

TO our mind, the first sight of the Royal Academy Exhibition is the most pleasant *coup d'œil* of the season. The treat is enhanced this year by the exemplary way in which the "hangers" have performed their not very light or grateful task, and for which they deserve our warmest congratulations. The arrangement of the pictures is at once symmetrical and well-balanced, and the finest works are so surrounded that they are enshrined and supported, while they in their turn support and enhance the works around them. Attention is called at once to the chief pictures, and passes from the jewels to the gold in which they are set. We should mention too that the line of pictures has been raised this year, so that a larger number of works will find room on the walls of the Academy, and when the galleries are crowded the people who are unable to see the pictures equal with the eye, may turn their attention to those works which have been raised to a higher level. On first entering the exhibition we are naturally attracted by the dead white of the sculpture. In the vestibule stand two fine busts, one of Mr. Gladstone, by Neville Burnard, the other of Sir Hope Grant, by Thomas Woolner; but leaving this portion of our subject for later consideration, let us enter the first room, and devote ourselves to the pictures. Mr. Vicat Cole will greatly add to his reputation by his fine landscape, No. 52, "Autumn Gold," a cornfield on the slopes of the Surrey hills, looking over the weald of Sussex. Seldom has the hue of afternoon sun been better given, while the arrangement of the figures, the reaper with his sheaves, and the loaded waggon, is excellent. Without coming at all too forward, or obtruding themselves upon the eye, they greatly add to the composition. Opposite this picture hangs Millais's fine landscape, "Chill October," of a river with a few willows in the middle distance, and the wind shaking the dry reeds in the foreground. There is rain in the air, but it is a fresh breezy day, and the running water, whose smooth surface is broken by slight silver ripplings, is gradated imperceptibly away into the far distance with consummate power. Mr. Cooper's picture, "Amongst the Fells," a snowstorm and sheep, rather disfigures the room by its overwhiteness. No. 70, "Rosy Cheeks," by G. A. Storey, is a clever fresh picture of children gathering apples, the children being evidently portraits. Mr. Mac Whirter's landscape we cannot praise; it is only a commonplace bit of scene-painting. Mr. Armitage's "Peace" depicts French peasants ploughing up bullets, bits of helmets, and other relics of war. No. 58, "Queen Mary Led to Execution," by L. J. Pott, is a work of much merit by a young man. Coming down a flight of stairs, the balustrade and landings hung with black, is the imprisoned Queen, who seems dazed with a vague feeling of coming terror. Her armed governor, who evidently loathes his task, leads her on. In the background are attendants, and descending the steps are armed retainers and the chaplain of the castle. Notwithstanding some defects of execution, there is much promise in this work. "A Question of Propriety," *vide* the annals of the Inquisition of Seville in 1689, by E. Long, is pleasant in colour. The subject is a dancing girl who is brought before the Inquisition for them to judge if her performance is correct. The various ways in which these "elders" gaze upon her dancing are well given. Passing into Gallery No. II., Mr. Leslie's large picture of "Nausicäa and her Maids," No. 103, instantly arrests attention. The painter has chosen his subject from the 6th chapter of the 1st book of the Odyssey, and seized the moment where the princess, having gone out with her attendants to wash the regal robes, afterwards rests to partake of the viands provided by the Queen, just before Ulysses, who is hidden near, shows himself, and claims the protection of the nymph. In the foreground, Nausicäa, with a ball in her hand, crowned with myrtle and dressed in white, reclines upon a blue rug. She is a lovely creature—an ideal princess, the creation of the painter's brain, and her maidens, almost equally beautiful, are grouped around her, The one in green, who is arranging Nausicäa's wreath, is specially graceful and elegant. The one standing on the right, darker in colour than the rest, and evidently inferior in rank, holds the newly-laved garments in her arms. The back-ground is tender and spring-like, and thoroughly English in feeling; but somehow Mr. Leslie's power of painting is so great, and his sense of beauty so complete, that this peculiarity, instead of being a crime, is another addition to the charms of his work. Mr. Leslie, perhaps from the habit of painting out of doors, adopts a very brilliant key, and avoids darks in his picture. No. 81, "Dr. Harvey and the Children of Charles I.," by Mr. Yeames, depicts the following incident in the life of the philosopher: The discoverer of the circulation of the blood being entrusted with the children of the ill-fated King during the wars of the Commonwealth, led them into the fields, and being absorbed in a book failed to observe that they had strayed into danger, and it was not till the bullets from a distant skirmish came whistling past him that he was aroused to the peril of the two boys, who are pourtrayed as having climbed up the bank to look on at the fray. The combination of landscape and figure in this picture is good, and it is a great improvement on Mr. Yeames's late works. Mr. Calderon has a very excellent portrait picture in this room; the lady's green and white dress is capitally painted; her action, too, is characteristic. Mr. Prinsep's portrait of a lady and child—the lady in a red dress—is boldly painted; so too, are his two boys, one clinging to a balustrade, the other fondling a white cat. No. 122, "The Avenue Deubies," by R. Redgrave, is a very bright and sunny landscape; the figures in the foreground are evidently portraits. "The Death of Buckingham," by D. W. Winfield, is a powerful work, rich in colour, and though the subject is full of horror, it is not at all ghastly in treatment. It represents the dead body of that Duke of Buckingham whom Felton murdered laid out on a billiard-table in a hall. Down the staircase come his wife and sister, appalled at the fearful sight below, and on the ground lies the long knife with which the murder was committed. The foreshortening of the figure of Buckingham is admirable. "Cromwell Sitting for his Portrait," by F. S. Cary, is capital in colour, and a work of much merit. "Colder than Snow," by G. H. Boughton, is very well painted, but the story it is supposed to tell is somewhat confused. Mr. Marcus Stone's picture of Henry VIII. and his son is unfortunate in composition; the figures are too small for the canvas, and there is no dignity in the action or figure of the king, which is, besides, badly drawn. No. 109, by H. Roberts, is a clever work. The subject is a Puritan soldier leading a party out of a wood on the track of footsteps; they are marching as if in fear of being surprised. The work is exceedingly well painted and truthful; but the heads have too much the aspect of being drawn from the same model. The landscape part of the picture is excellent. Mr. Hardy sends the old story of "The Wedding Breakfast" (No. 121), a very pleasantly painted work. The sisters and brothers and other relations of the bride sit round the table; the father has just risen to drink health to the young couple, while *his* father looks on, and remembers the time long ago when he did the same thing for the present speaker. "The Children's Dance" (No. 126), by G. B. O'Neill, though less firmly painted than Mr. Hardy's picture, is a pleasant work. Blooming little girls between eight and ten, an age when dancing is really pretty, skim round with their younger brothers—an elder sister presides at the piano—while the grandparents look on with tender admiration. The servants peeping from the staircase appear, to us, a little small.

In the centre of the great room on the north side is placed Mr. Leighton's "Hercules Struggling with Death over the Body of Alcestis," an attempt after that higher branch of art so much needed in the Academy. Stretched out on a bier across the picture lies the apparently dead body of the devoted wife, with a wreath of myrtle, and robed in white drapery. In front of her on the left are maidens weeping and strewing flowers. On the right Death tries to enter to carry away his prey, but is forced back by Hercules. The action of the two figures is finely conceived. In the centre the bereaved husband, in an agony of grief, gives vent to his sorrow. A storm rolling away in the distance, and the sun breaking forth, indicates the return to life of the victim whom Hercules succeeds in rescuing from the destroyer. The whole, though a noble conception, seems to want a little more vigour in the darks, and we are not entirely satisfied with the anatomy of the back of Hercules's right arm. As opposed in manner as it is in position to Mr. Leighton's picture is a work of much importance by Frith, "The Salon d'Or at Homburg," showing a phase of life and a state of society by which modern civilisation is disgraced, and which will, we hope, soon be a thing of the past. In the centre is a desperate woman leaving the table; having staked her last stake, hope has given place to desperation, we can divine the end; near her a husband is presenting his wife, who takes it reluctantly, with some of his ill-gotten gains. On the opposite side of the table is a woman who has grown old at the gaming board; she knows all the shifts, meannesses, and pettinesses of a gamester's life, and she still makes an effort to appear youthful in her get-up. At the end of the table a young man anxious to make another stake is restrained by his wife. The stolid, bored look of the officials, weary with the routine of duties in which they have no interest, contrasts with the intense attention and anxiety of the players—*Le jeu est fait*—the dealer is about to give out the cards, the two croupiers (one of whom examines his watch to see if the time is not nearly up) are ready to take in the stakes, and the president sits overlooking the whole. Behind him are groups of the usual visitors to this fashionable bath; some of them, pretty girls in the first freshness of blooming youth, are about to stake, out of mere desire for amusement, a small sum upon the gaming table, little thinking that many of the now hard-faced *habitués* began in the same way. The picture, though capitally painted, leaves an unpleasant impression on the mind, because it delineates one of the worst vices of the human race, and while we gaze we earnestly hope that this picture will soon be no longer a ghastly reality, but a memento of the past. Next to this picture is a fine portrait of Mr. Bruce, the Home Secretary, by H. T. Wells. The west end centre is occupied by the principal work of Mr. Millais. The subject is taken from that passage in Exodus which describes the battle against Amalek, when the Israelites prevailed only when the arms of Moses were raised to Heaven, so that they were held up by Aaron and Hur till the setting sun, when the victory rested with the children of Israel. This is a very ambitious attempt by Mr. Millais, and a very successful one, powerful in colour and grandly drawn. The law-giver is dressed in a dark robe, whereas as a Levite he should have been arrayed in white; but this is an anachronism which the painter may have deemed necessary to the composition of his work. He has shown great strength of mind in giving the Jewish type of features to the three Hebrews, though it is not at all painfully insisted on. On either side of this picture are works by Horsley and Ward. In No. 182, "Anna Boleyn at the Queen's Stairs, Tower," Mr. Ward has chosen the moment when the unhappy Queen first feels a strong presentiment of her approaching fate. She is described as throwing herself down on the step, and exclaiming, "Jesus, have mercy on me!" Behind her, on the right, is the Spanish Ambassador and his suite, who naturally look on callously at her woe. Mr. Horsley, in No. 193, gives us a scene from the life of a still more unfortunate Queen, Mary Stuart, when under the care of Lord Shrewsbury she suffers from the cruel treatment of the proud Bess of Hardwick. Mary is feeding the pigeons, birds as pretty and bright as herself, but free, while the nobler bird is enthralled in a cage. The little page who holds the plate of bread-crumbs for her forgets the respect he owes to his sovereign while engaged in a deep reverence to her haughty gaoler. His action is rather awkward, though the idea is good. On the left two women attendants rise respectfully from their seats. This picture is painted with all Mr. Horsley's crispness and fondness for cheerful colouring. Mr. Hook has two pictures in this room, a shepherd boy extracting a thorn from the foot of his dog, a few sheep, and the usual rural background, make such a picture as we are accustomed to from Mr. Hook, charmingly green, and full of true country feeling. His Norwegian subject in this room has all the verdure of England, and but for the curious erections for trapping the salmon might have been painted from many parts of Cornwall or Scotland. Mr. Calderon's chief work is in this room. No. 166, "On Her Way to the Throne." A young and beautiful queen is having the last touches put to her toilet ere the two ushers in waiting draw aside the curtains of the state apartment. A bevy of fair ladies, graceful and charming, are following her down the stairs. The dresses are well treated, nicely finished, without intruding on the eye, and the execution is agreeable. It is a picture of much grace and beauty. Mr. Calderon is much stronger in his work this year than last. The new Associate, Mr. Marks, sends a capital picture, "The Bookworm." The old man is a wonderful bit of character, and all the accessories of the picture—the quaint skeletons of birds, the books, and instruments—are most carefully and conscientiously wrought. No. 144, "Cléopatre apporté à César dans un Tapis," by Gerome, is not an agreeable picture, though the quality of painting is excellent. No. 210, "A Roman Emperor, A.D. 41," by Alma Tadema, is one of the largest works ever exhibited on the walls of the Academy by this painter. It has all his usual attention to the minutiæ of Roman life, and the same power of restrained colour as his other works exhibited in this country; but this picture is painted with greater boldness and facility, and is quite one of the painter's masterpieces. The subject is the murder of Caligula by the prætorian guard. The dead Emperor, with three or four companions, has fallen at the base of a terminal bust. The author of the crime, Cassius Chærea, a tribune and captain of the guard, by withdrawing a curtain has just discovered Claudius, uncle of the murdered man, and salutes him emperor. Claudius, who is in deadly fear of sharing his nephew's fate, imagines that he is being mocked, and listens to the shouts and acclamations of the women and soldiers rather as if they were savage outcries of vengeance than acclamations in his favour. The marks of bloody fingers on the pedestal of the bust are tokens of the recent fray. Observe the careful finish and the delicacy of handling in the painting of the pavement and the marble column. This picture will claim much attention, and be of great interest to the public. We must, however, criticise the grouping of the dead, who lie all together in such an involved heap that the different figures cannot be disentangled. Mr. Cope's picture of Guy showing the plans of the hospital which he intended to found to his friend Dr. Mead is an historical incident of much interest, and painted with all Mr. Cope's usual carefulness. "Annie," by J. Archer, is a very elegant and pretty portrait of a young girl about seventeen; the same painter has another subject picture in this room. Mr. Mason sends a landscape placed in the corner of the room, delicate and truthful in colour. The President has two large works in this gallery—one an equestrian portrait of Sir James Yorke Scarlett. The new Painter-in-Ordinary, Mr. Sant, sends a charming portrait of his daughter, which has something of the freshness and grace of Gainsborough. Mr. Knight has a good half-length portrait of the late Joseph Henry Green. Mr. Watts sends the two handsome Academicians, Millais and Leighton. To the latter he has not done full justice, but the head of Millais is a characteristic likeness, painted with great power and feeling for colour. Though many Academicians are conspicuous by their absence, we think this may safely be pronounced a more than average exhibition, and having gone thus far and criticised the principal works in the great room, we must put off a more detailed account of the remaining galleries for a later notice.

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EXPERIMENTS ON THE STRENGTH OF PORTLAND CEMENT.*

In a previous paper † the author had stated that "further experiments were desirable, on the strength of and adhesion between bricks and cement under varying circumstances; on the limit to the increase of strength with age; on the relative strength of concrete made with various proportions of cement and ballast," &c. The experiments described in this paper were made with the view of throwing additional light upon these points; and might serve to show those interested in the subject the direction which their inquiries might advantageously take, and the large field yet open for their labours.

Before describing the new series of experiments, some of the points in the previous paper were reviewed. Among these were "the limit to the increase of strength with age," which Tables XVIII., XXIV., XXV., and XXIX. were intended to illustrate, and the experience of the last five years was given.

Table XVIII. had contained the results of one hundred and sixty experiments, intended to extend over ten years, with Portland cement, weighing 123lb. to the bushel. Neat cement, which at seven days broke at 817.1lb. increased gradually in strength, till at two years it bore a tensile strain of 1324·9lb. By the extended tables it was shown that the maximum had been attained at two years, and that the result was 1327·3lb. at seven years. With sand in equal proportions the increase in strength continued; that which at seven days broke at 353·2lb., at one month at 452·5lb., and at two years at 790·3lb., or 42, 50, and 60 per cent. of neat cement respectively; bore 818·1lb. at four years, 821lb. at five years, 819·5lb. at six years, and 863·6lb. at seven years, being about 65 per cent. of neat cement.

Table XXIV. gave the strength of Roman cement at various stages from seven days to six years. The results did not uniformly and regularly increase. This cement bore a strain of 201·83lb. at seven days, 376·8lb. at six months, 323·8lb. at twelve months, 438lb. at two years, 450·8lb. at three years, 512·6lb. at four years, 466·9lb. at five years, and 466·6lb. at six years. The irregularities were very great, and confirmed the conclusion that this kind of cement was not nearly so uniform in strength as Portland cement, and that though two-thirds of the price it was only about one-third of the strength, and therefore double the cost of Portland cement measured by strength.

Table XXV. related to another Roman cement, and brought down the experiments five years later. Cement which at seven days broke with a tensile strain of 232lb., and attained to its maximum 643·1lb. at twelve months, broke at 546·3lb. at two years, 603·8lb. at three years, 632·2lb. at four years, 627·4lb. at five years, and 666·4lb. at six years.

Table XXIX. referred to Medina cement, which at seven days bore strains of 92·1lb. (1st series), and 211lb. (2nd series), attained a maximum strength of 476·9lb. at twelve months, and bore only 276lb. at two years.

As a preliminary to the further experiments hereafter described, upwards of two hundred were made to ascertain if the form of mould which had been previously used could be improved. The results of these were given in Table V. No. 1 was that which had been adopted at first (January, 1859), because found in use both in France and England. No. 2 showed the same size, with the inner angles rounded off. Twenty moulds were made of each kind; ten were broken at seven days, and ten at thirty days, all having been kept in water. Forms 2 and 3 gave the highest results, and it was therefore presumed that No. 2, the form of mould shown in Plate 3 of the original paper, was of all these the least subject to error and irregularity. The later investigations of Mr. Bramwell, "On the Influence of Form on Strength," would lead to further experiments on this point. A large number of experiments had been made as to the best mode of avoiding distortion from the line of strain. The plan originally adopted was shown on Plate 2 of the former paper. Another method was also shown on Plate 4, but it was found that moulds frequently broke at the holes in each end of the specimen instead of at the neck. The original form of clips was therefore reverted to, but in combination with knife-edges at each end of the clips.

The next step was to establish the conditions to be observed in the following new series of experiments:—

A. On the strength of Portland Cement tested by tensile strain at different periods, from one day to twelve months, mixed by hand and ground in a mortar mill.

B. On the adhesion between bricks cemented with Portland Cement and lime mortars, tested by tensile strain at the end of twelve months.

C. On the strength of Portland Cement neat, and with different proportions of sand, tested at the end of twelve months, by compression in a hydraulic press. Size, 9in. by 4½in. by 3in.

D. On concretes of different proportions of Portland Cement and lime, with gravel, sand, and other materials, tested at the end of twelve months by compression. Size, 12in. by 12in. by 12in., and 6in. by 6in. by 6in.

For these experiments 38 bushels of Portland cement were procured; the gross weight being 4,300lb. 11oz., or 113·176lb. per bushel. When sifted through a sieve of four hundred holes per square inch this was reduced to 4,201lb. 4oz., or 110·56lb. per "striked" bushel. About 36lb. were afterwards rubbed through the sieve; 34lb. would not pass, and there was a loss of 29lb. A certain quantity of cement was sifted, when it was found that the gain by sifting was about 14 per cent.

The following were the weights per bushel and per cubic foot of the materials used in the new series of experiments:—

Materials.	Weight of One Bushel.	Weight of One Cubic Foot.
	lbs.	lbs.
Portland cement	110·56	86·375
Sand and ballast	123·40	96·400
Portland stone	98·30	76·560
Broken granite	116·00	90·625
,, pottery	113·00	88·280
,, slag...........	107·00	83·594
,, flints	126·00	98·440
,, glass	120·00	93·750

Table VI., Series A., gave the strength of the Portland cement used throughout these experiments at different periods from one day to twelve months; first, mixed by hand, and next, mixed in a mortar mill for thirty minutes. In the first case the maximum strength seemed to have been attained at four months; in the second, at one month; the greatest strength of that mixed by hand was about double that mixed in a mortar mill. The hand-mixed cement maintained its strength; the mill-mixed declined from its maximum at a month to the end of the experiments. This result was probably due partly to the process of crystallisation, or setting, having been interrupted by the continued agitation, and partly to the destruction by attrition of the angular form of the particles.

Table VII., Series B. on the tensile strain required to separate bricks cemented together with Porland cement and lime mortars, would require to be greatly extended before trustworthy deductions could be made from them. In the case of perforated bricks the cement mortar seemed to act as dowels between the bricks, and the results were consequently high. The Suffolk and Fareham red bricks adhered well to the mortar.

Table VIII., Series C, on the strength of Portland cement bricks tested by crushing, was, so far as it went, very instructive. As a rule, strength increased with density. When the cement was in less proportions to the sand than 1 to 2, or 1 to 3, those dried in air bore a greater pressure than those kept for twelve months in water. This would lead to the inference that when the quantity of cement was small, bricks or blocks of concrete should be kept some time out of water, to harden before being used. Contrasting the strengh of these concrete bricks with different clay bricks, it was found that down to the proportion of 6 to 1 the former compared favourably. Thus, bricks made of neat cement bore a pressure equal to that of Staffordshire blue bricks or best Fareham red bricks. Bricks made in the proportions of from 2 to 1 to 6 to 1 of cement were equal to picked clay bricks of six varieties.

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* Abstract of paper read by Mr. John Grant, before the Institution of Civil Engineers, April 25.

† *Vide* Minutes of Proceedings Institution of Civil Engineers, Session 1865-6, Vol. XXV., p. 66.

The D series showed the strength of concrete bricks made with Portland cement, mixed with various metals in different proportions, and crushed after being kept a year, half of them in air and half in water. The general deductions were, that those made with the largest proportion of cement were the strongest, the strength being nearly in proportion to the quantity of cement. Tables were given of the strength of 12in. and 6in. cubes of concrete made with ballast, Portland stone, broken granite, pottery, slag, flints, and glass, mixed with Portland cement in the proportions of 6, 8, and 10 to 1, and compressed. Half were kept in water for twelve months. The most prominent result of these tables was that concrete made of broken stone or broken pottery, was much stronger than that made of gravel, due, no doubt, partly to the greater proportion of cement absorbed in the latter case in cementing the finer particles of sand, and partly to the want of angularity in the gravel. Compression and an increase in the proportion of cement alike increased strength. In making concrete bricks or blocks of moderate size compression might be applied with advantage; but with large masses of concrete it would be difficult to do so, without running the risk of interrupting the process of crystallisation or setting, which commenced immediately on the application of moisture. The cost of labour so applied would therefore be better employed in a larger admixture of cement.

The different modes of using Portland cement in the construction of sewers were described: in some cases only as a foundation or as a backing for brickwork; in others sewers, 4ft. 6in. by 3ft., of concrete were lined, with half-brickwork; and in other instances sewers were formed entirely of concrete in the proportions of 1 of cement to 6 of sand. The cost of this concrete was less than half that of brickwork, but if rendered inside with cement it was about the same as if lined with half brick—perhaps the cheapest form of sewer, combining strength with soundness. Sewers and culverts of almost any size might be made on this principle. Sewers made of concrete and not rendered inside, though somewhat cheaper, had one practical disadvantage in busy thoroughfares, inasmuch as they required a long length of centering, on account of the slow setting of the concrete, and it was therefore necessary that about double the length of trench should be open at one time. The cost of a concrete sewer, 4ft. by 2ft. 8in. was 10s. per lineal foot, exclusive of excavation. Under the same contract a brick sewer of the same size, 9in. thick, cost 16s. 6d. Another concrete sewer, 7ft. 9in. in diameter, cost 16s., or inclusive of earthwork, side entrances, junctions, &c., about 23s. per lineal foot. This sewer was in some respects exceptional, inasmuch as it consisted of little more than an arch over a previously existing invert; the lower half was, however, rendered with cement and sand, in equal proportions 1in. thick. Everything being taken into consideration, the most economical combination was 4½in. of brickwork in cement and the rest in concrete. Another sewer 9ft. by 9ft., of concrete. with a lining of 4½in. brick in cement, was mentioned.

In the construction of the Albert, or Southern Thames Embankment, it was originally intended to form the wall of brickwork, with a granite facing; but after about a fourth part of the work had been executed, 14,335 cubic yards of Portland cement concrete, made in the proportions of 6 to 1, at 11s. per cubic yard, were substituted for an equal quantity of brick work, at 30s. per cubic yard.

From the experience already gained in the use of Portland cement concrete, there would seem to be hardly any limit to the purposes to which it might be applied. It was gradually being brought into use in the construction of dwelling-houses in different parts of the country, and there was no doubt it would be still more extensively employed in the construction of docks, piers, breakwaters, and other massive engineering works.

Many experiments had been made in the manufacture of bricks of different proportions of Portland cement and sand, and these were equal in strength and appearance to most kinds of clay bricks. Where concrete could be used in a mass, it was cheaper than when used in the form of blocks, and still cheaper than in the form of bricks. In 1867, a number of arches were formed with "Bétons Agglomérés," by M. Coignet, under the steps leading from Westminster Bridge to the Albert Embankment; also 40ft. of sewer, 4ft. by 2ft. by 8in., in the Camberwell-road. Similar arches and sewers were constructed of Portland cement concrete, and the general result was that the Portland cement concrete was both stronger and cheaper than the béton.

Tables were given of the strength of 589,217 bushels of Portland cement used during the last five years on various works south of the Thames, showing an average tensile strain at the end of a week of 806·63lb., equal to 358·5lb. per square inch, being an improvement on that reported five years ago of 200lb. on the breaking area of 2¼ square inches, or 89lb. per square inch. The quality had not only been maintained, but had continued to improve. The strength at the end of thirty days of 37,200 bushels of the same cement, as ascertained by eleven hundred and eighty tests, averaged 1,024lb., equal to 455lb. per square inch, showing an average of 234lb., or 30 per cent. over the cement tested at seven days, which broke at 790lb. Wherever the nature of the work would admit of it, tests at the end of a month would be found more satisfactory than if made earlier, as heavy cements, though the strongest eventually, were the slowest to set. The standard originally specified was 400lb., or 2¼ square inches, and this was soon afterwards raised to 500lb., or 222lb. per square inch This had since been increased to 350lb. per square inch, or 787lb. on the breaking area at seven days. For the purpose of comparison the same sectional area at the breaking point (2·25 square inches) had been retained. Further experience had confirmed the earlier conclusions, that the strength of Portland cement increased with its specific gravity, its more perfect pulverisation, and its thorough admixture with the minimum quantity of water in forming mortar. Heavy cement, weighing 123lb. a bushel, like that referred to in Table XVIII., took about two years to attain its maximum strength used neat; but by the admixture of sand or gravel, cement, mortar, or concrete was reduced in strength and set less rapidly than neat cement. Roman cement, though from its quick setting property very valuable for many purposes, deteriorated by exposure to the air before use; and was about double the cost of Portland cement if measured by strength. In making cement concrete it would from this seem desirable to spend no more time than was absolutely necessary to affect a thorough admixture of the cement with the sand and gravel.

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WORCESTER DIOCESAN ARCHITECTURAL SOCIETY.

THE seventeenth annual meeting of this flourishing society was held at Worcester on the 15th inst., under the presidency of Earl Beauchamp. The annual report, read by Mr. Severn Walker, the hon. sec., stated that the first excursion of the season took on July 5 last, to the neighbourhood of Upton-on-Severn, for the purpose of visiting Eastington, Longdon, Pendock, and Birtsmorton. Eastington is stated in the report to be an excellent example of an ancient timber manor-house, having the hall with its screen perfect, a picturesque porch, richly-carved barge boards, and a bay window in the first floor, connected with the gable in an unusual but artistic manner. Pendock Church is a small structure, with a massive fourteenth century western tower. The north and south doorways, the jambs of the chancel arch, and the font, are Norman, but the windows are later insertions. Most of the old open seats remain. The Church of SS. Peter and Paul at Birtsmorton, is an aisleless cross church, with western tower and south porch. The side windows are of two lights, and Middle-pointed in style; those at the gable ends of three lights, and Third-pointed. The nave is filled with the original open oak seats; and on the end of one of them is fixed a curious cylindrical alms box. The wooden gates across the chancel arch remain, and also the returned stall-like seats of Elizabethan character. Amongst other noteworthy features may be mentioned an elegant piscina in the chancel, a plainer one with a square drain in the south chapel, old stained glass in the east and nave windows, &c. Near to the church stands the Court-house, surrounded by a moat, long the seat of the ancient family of Nanfan, and in which Huskisson, the statesman, was born in 1769. The house dates from the sixteenth century, but the gateway, with its massive wooden doors, is probably late fourteenth century work.

The second excursion of the Society took place on the 13th of September, when the Abbey Church of Tewkesbury and the curious church of Deerhurst were visited. The remarkable architectural features of the latter building were pointed out by the vicar, the Rev. G. Butterworth. After dining at the Swan Hotel, Tewkesbury, the party, under the guidance of the Rev. Charles Bontell, visited the Abbey Church, with its fine series of tombs, chantry chapels, and other monumental remains.

Of the works executed in the diocese, the report says that the principal work done at the Cathedral during the past year is the pavement of the Lady Chapel and eastern transepts, which the committee regret being unable to report favourably of. It is composed of red and yellow Mansfield stone and Portland stone, arranged so as to form a diamond-shaped pattern, with a quatrefoil surrounded by a narrow band of black marble in the centre. The pattern is so large—extending the whole width of an aisle—as to diminish the apparent size of the building; and the entire absence of anything like richness of effect renders it unworthy of this important and beautiful stucture. It is to be hoped that the pavement of the choir and nave will be more satisfactory, both in design and material. On removing the effigy supposed to represent Bishop William de Blois (who died in 1236) last September, a stone coffin, containing a skeleton and fragments of vestments, was exposed to view. Portions of as many as ten figures of saints embroidered with gold thread, together with an elegant border, fringe, &c., were found in tolerably good preservation, and are deposited in the Chapter library. Full-sized drawings of all these fragments were made by Mr. C. Hennan, jun., architect, of Croydon, and will be published in the forthcoming "Sketch Book" of the Architectural Association. An appeal made last spring for funds to complete the restoration of the Cathedral, and to provide internal fittings, was liberally responded to, a larger sum than required being promised in the course of a few weeks. The rough surface of the choir vaulting has been plastered, and Messrs. Hardman are now decorating it in gold and colour. The old walls have been repaired, and other works are said to be in hand, consequently the completion of this important restoration may be looked for at no distant period.

The new church of S. Philip, at Webheath, in the parish of Tardebigge, was designed by Mr. Preedy, and erected at the cost of the late Baroness Windsor, on a site given by Richard Hemming, Esq., of Bentley Manor. It consists of chancel, vestry, nave, and north porch, with a bell gable at the east end of the nave. The style is Early Middle Pointed, accommodation being provided for 200 worshippers. The pulpit, the prayer-desk, and other chancel fittings are of oak; the roofs and nave seats are of deal; and the font of stone, with shafts of Irish green marble. Beneath the east window is a handsome reredos, having in its centre a white marble cross between panels containing angels, executed in glass mosaic.

Bishampton Church has been rebuilt, with the exception of the tower, under the direction of Mr. Preedy. The new structure occupies the site of the former building, but the nave is five feet wider than its predecessor, to compensate for the loss of room occasioned by the omission of the transeptal chapel on the south side of the old church; and there is a vestry north of the chancel, into which it opens by a side arch. The old Norman doorways, some small windows of the same date, two or three pointed windows, and a few other fragments have been re-used. The new windows of the nave were copied from a 14th century square-headed one belonging to the previous church. The chancel is well arranged, and in the sanctuary is a full-sized altar table, with a credence niche and slab on the north side. The rather heavy-looking nave roof is of somewhat lower pitch than usual, and might have been carried up to the belfry stage of the tower with advantage to its appearance both externally and internally.

A chapel-of-ease, dedicated to S. Mark, has been erected in the district of The Lye, near Stourbridge. It was designed by Mr. Smith, of the latter place; is built of red brick, with stone dressings, and comprises a wide and rather short apsidal chancel, vestry, nave with north and south aisles, north porch, and western bell-cot. The funds available for the erection of this building being comparatively small, a method of construction differing from that usually followed in structures of this character has been adopted. The nave is separated from its aisles by arcades formed of cast-iron columns and wooden arches. These support a clerestory also of wood, having two cinquefoiled windows in each bay. The roof is steep-pitched, and strengthened with iron tie-rods to guard against the settlements which sometimes occur in this undermined district. The architectural effect of the interior is not of course equal to that of churches constructed entirely of masonry or brickwork, but nearly all the seats command a view of altar, chancel, and pulpit. The only attempt at decoration is the painted centre window of apse, executed by Messrs. Ward and Hughes.

A chapel, dedicated to the Good Shepherd, and constructed for 120 worshippers, has been erected at the Hook Common, in the parish of Upton-upon-Severn, from the designs of Mr. G. Row Clerke. It consists of chancel with vestry, nave with south porch, and bell gable over the chancel arch.

St. Andrew's Church, Worcester, after undergoing two attempts at partial restoration during the last twenty years, was in a most unseemly state, especially as regarded the north aisle, when the present rector took charge of the parish in 1867. About two years ago, Mr. Hopkins was commissioned to prepare plans for a thorough renovation of the entire building; but the necessary funds for carrying out the whole work not being forthcoming, the intended improvement was confined to the north aisle, and the eastern portion of the south aisle, which have been almost re-built, new windows and doorways inserted, and the old panelled roofs repaired; a new carved and panelled ceiling being placed over the south chapel, which now serves as a vestry, with the organ between it and the chancel. The exterior of this chapel is surmounted by a rich parapet, pierced with quatrefoils, terminating towards the west in a crocketed pinnacle, which rises out of a massive buttress. The old work, being chiefly Third-pointed, the same style has been adhered to in the restoration. The chancel has been re-arranged for clergy and choir, and the wide north aisle provided with chairs. About £1,100 has been expended, and £1,000 more will be required to complete the work.

The parish church of Longdon, with the exception of the tower, was rebuilt about the year 1786, in a more unsightly manner than was usual even at that time—when ecclesiastical art may be said to have sunk to its lowest state of degradation. It was built of brick, the south, or "show," side being covered with stucco, and having a large Venetian window in the middle, while a small and low semicircular projection at the east end served the purposes of chancel and sanctuary. In 1868, plans for rebuilding the church in character with the old tower and spire were prepared by Mr. Arthur Blomfield; but these being considered to involve too large an expenditure, it was determined not to interfere with the fabric of the nave, but merely to re-arrange the fittings, and build a new chancel and vestry.

S. Thomas's, Dudley, S. James's, Worcester, and S. John's, Kidderminster, all modern churches, are noticed in the report as having been considerably altered and improved. Amongst the new buildings erected in the neighbourhood, the report refers to a mission hall in Wildes'-place, erected from the designs of Mr. H. Rowe, Late Gothic in style; two groups of school buildings in the parish of Powick, from the designs of Mr. Preedy, and an infants' school for the parish of S. Clement, Worcester, from plans by Mr. E. A. Day, of a simple Pointed type. The recently completed new churches of Pedmore and West Malvern, will be noticed in the next report of the Society. The important church of King's Norton has been placed in the hands of Mr. Hopkins, for thorough and careful restoration, and the parish church of Birlingham is about to be re-built under the superintendence of Mr. B. Ferrey.

On the motion of Mr. J. G. A. Walker, seconded by Mr. H. Holden, the report was unanimously adopted, and the officers for the ensuing year having been re-elected, the proceedings terminated.

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BARROWS ON THE YORKSHIRE WOLDS.

THE closing lecture of the session in connection with the Hull Literary and Philosophical Society was delivered a fortnight ago at the Royal Institution, Hull, by the Rev. Canon Greenwell, the subject being "The Barrows on the Yorkshire Wolds." The lecturer, in his introductory remarks, said that barrows or mounds were to be found in nearly all parts of the earth. They were found in England, but they were, perhaps, in greater abundance in the southern parts of Asiatic Russia and the northern shores of the Black Sea than anywhere else. In Africa they were the most numerous on the shores of the Mediterranean. There were not many of such remains to be found south of the desert of Sahara. The mounds however, of which he was to speak, and which existed on the Yorkshire Wolds, were of a time which might be called pre-historic. The works attributed to Homer contained accounts of interments similar to those in the barrows. The Yorkshire Wolds, where the barrows were found in such abundance, appeared to have been at one time a sort of island, being bound by the sea and swampy land. It was, therefore, a desirable piece of territory, and was well populated. The barrows, which were supposed to contain the remains of great persons and heads of families, went in proof of the belief that the Wolds were extensively peopled. There were also earthworks crossing the Wolds, beginning at Danes Dyke, near Bridlington, which went in support of the same belief. Another striking indication of the occupation was the great number of flint implements scattered along or near the surface of the ground. The barrows on the Yorkshire Wold were of two kinds, the long and the round ones. The former were the fewest in number and furnished the least information. They were nearly all placed east and west, the east end being wider than the west end. It was believed that the long barrows were the burial places of the earliest people connected with the barrows, and who lived perhaps 1,000 years before Christ. The round barrows were of a later period, as in them were found traces of metal. There were also secondary interments in the long barrows, of the same kind as those in the round mounds, which went far to prove that the long barrows were those of an earlier people. Many bodies were found in some barrows burnt, but how the burning was effected was not known, there being no traces of charcoal, and the chalk and oolite being fused so as to have bone fixed in the stone. This state of things existed in some barrows, where were also found the remains of numerous other bodies, violently broken and distributed about. It might be that they were the remains of persons eaten at the funeral ceremonies of the great persons buried in the barrow, as the bones were scattered about in the same way as the remains of animals feasted upon at other interments. The lecturer then proceeded to describe the interments in the round mounds, stating that men, women, and children, probably the whole members of families, were found buried together. The mounds were also encircled with stones in a Druidical manner. Pottery, ornaments, weapons, and other implements were found in the barrows. In many mounds urns were found, but whether they contained parts of bodies, kindling to set the bodies on fire, or were placed for the use of the departed on their way to another world, is not known. The lecturer states that the conclusions arrived at respecting the researches at the barrows were that the people of that time at which the mounds were made lived at a period of 1,000 years before Christ, being when bronze was only used in small quantities, and when the use of iron was unknown. The traces of clothing, bones of domesticated animals, and other articles, showed that the people were considerably advanced in civilisation.—After some discussion a hearty vote of thanks was accorded to the lecturer.

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ART METAL WORK.*

(*From the Sacristy.*)

IN the enthusiasm for general workmanship which accompanied the revival of Mediæval art, a very natural reaction set in against the perpetual repetition of feeble designs by means of casting, both in iron and other metals, to which the world had been accustomed from the middle of the eighteenth century. The mechanical nature of the process was declared entirely to preclude the individuality so characteristic of old work, and an exterminating crusade being instituted against the abomination, was carried to so successful an issue that a specimen of cast work, even in brass, dared seldom to show itself in the presence of the "Gothic architect" and his followers, whilst cast iron is only admitted as a structural necessity, and is not to be allowed as an object of art, excepting perhaps as a coil case for hot-water pipes, or in a similar subordinate position. It may be taken as a maxim that if you must have iron it must be wrought.

There is, however, no doubt that the incapacity of the artist or manufacturer was really the cause of cast iron being thus cruelly cut off from all communication with the Mediæval revivalists. The process itself is sensible enough, and is such an one as the artists of the Middle Ages would certainly have used had there been facilities for so doing; but it was supposed that Pugin looked upon it with disfavour, and his enthusiastic followers came to the conclusion that all good metal-work must be wrought, and so the matter has rested, leaving cast iron to the engineer and ironmonger, who continue as of yore, to repeat *ad nauseam* ten thousand hideous patterns for things of common and everyday use which might as well be in accordance with "true principles" as not.

We are quite justified in criticising the productions of those who are professedly followers in the school of Pugin from a high point of view. They themselves demand that we should do so, and were they but true disciples of their master, it would be difficult to find a more agreeable task. After studying his works, more particularly that magnificent collection in the Houses of Parliament, one cannot fail to be lost in admiration at the wonderful energy and knowledge which may be said almost to have re-created a forgotten phase of art; whether he designed for brass or iron, the utmost thought and consideration for the most appropriate treatment of the metals was never wanting—from a door-handle upwards nothing was too unimportant: indeed, one can never be sufficiently thankful that two such great artists as Barry and Pugin were enabled to work together over this superb building. Neither of them alone could have carried it out; and we would further venture to say that they were the only two which together could have done it.

One can, however, see where, especially in some few details of the brass work, the imitators have found a certain precedent for the style of work now so common. The better designs are not copied, but the peculiarities (and what in Pugin we can scarcely venture to call defects) are abundantly reproduced, and may be seen in every "art metal worker's" window by the score.

It would be needless to call attention to the fact, were it not so universally overlooked, that the artistic treatment demanded by brass and iron is very different. Cast iron is capable of receiving a sharpness of modelling almost, if indeed not quite equal to bronze, although—to our shame be it spoken—it is to Berlin we must go to find this perfect execution. Brass can no doubt be brought to a very sharp finish, but its artistic effect is not so good as when the lines are somewhat softened and the edges rounded off. With the beauty of this style of work Pugin was perfectly acquainted, and the specimens we have before referred to amply prove it. The doors leading from the peers' lobby into the House of Lords, and numerous lesser objects, chandeliers, grills, and door-fittings, are all charming examples of the beauty and applicability of cast brass treated as such; but when we turn to the work of our own day, we find, as an universal rule, that the design, whatever it may be, which has been executed in brass, would have been far better carried out in wrought iron. The imitators have, in fact, imitated such work as the rails in the House of Lords and round the throne, where there is a certain approach to wrought-iron detail, and have overlooked the finer work.

Thin wiry crosses, with leaves punched out of a plate and stuck on, take the place of the fine modelling we see in old brass work.

Passion-flowers, tendrils, and naturalistic leaves are produced in so tender a material, that after a short lapse of time the most exposed parts invariably become unscrewed, or are knocked off—a thing which in itself should condemn such a mode of work. An examination of old work shows us that whilst wrought iron, which is riveted and welded together. is worked to the utmost degree of delicacy, brass is universally employed in a more solid manner; and casting is almost invariably resorted to. The magnificence of cast brass is hardly to be exceeded. There are noble specimens of this class of work still existing in Holland, Belgium, sundry parts of Germany, and other parts of the Continent, whilst at home we possess the sumptuous gates and grill in Henry the VII.'s chapel at Westminster, which will long outlast such flimsy things as the Lichfield screen or other similar works, which, to use the words of Mr, Burges, "are at the mercy of the first person who has got his opportunity and a screwdriver." Not only, however, can no satisfactory reason be shown why we should not once more return to the employment of good legitimate castings in brass, but we venture to think that this much-abused process applied to iron may dare to invade the precincts of the art metal worker's shop, and even show itself in the church.

Well knowing that in exposed situations cast iron is practically indestructible, whilst wrought iron rots with the utmost rapidity, it is simply absurd to object to the use of the former material for external railings, gates, and screens, because, forsooth, it is not "Gothic." As we have before said, the artist must be at fault in these matters, and not the material. There can be no doubt that when men were so happy as to know nothing about "style," or the trammels which the modern interpretation of the word brings with it, had cast iron been as available a material as it now is it would have been very largely employed where we now consider it to be inadmissible and unworthy. Why a rood screen, including the figures, should not be constructed of cast iron as well as of wood is a question difficult to answer, both materials being equally capable of an artistic treatment perfectly suitable to the requirements of the case; but there are no "examples" of old cast-iron screens, whilst there are any number of wooden ones, and it being totally wrong to do anything without some "authority," it is obvious that we shall not see any cast-iron screens, at least for the present. At the idea of a cast-iron bench-end for a church, every one would turn up their eyes in pious horror, and talk of garden-chairs; but there can be no reason why such a thing should not be, if we were only up to the mark. It is, however, to be devoutly hoped that no one will attempt such startling novelties under existing circumstances. We have only ventured to put the case in, perhaps, rather a strong form, feeling certain that a great number of the things which are supposed to be "correct" and "Mediæval," are just the very things that the artists of the Middle Ages would *not* have done, if they had possessed the facilities we enjoy.

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* In our impression for Friday, the 7th inst., Mr. Burges reviewed *The Sacristy*, a new quarterly review of ecclesiastical art. He spoke of two articles which the review contained as particularly worthy of attention; one on "Colour for Decoration," which we reproduced a fortnight since, and the other on "Art Metal Work," which we reproduce now.

Having beaten cast iron out of the field, wrought iron has certainly had its way most completely, occupying all available ground in the regions of ecclesiastical metal work; and he must be a bold man indeed who ventures to approach the terrible and prickly things erected by modern ingenuity, did he not know that Mr. Burges's words, before quoted, applied to iron as well as brass work. Indeed, it is said, in proof of this, that at a certain cathedral, boasting an elaborate rood screen, artfully compounded of wrought iron and brass, the verger was wont to exhibit specimens that had become unscrewed and fallen off, to show to the British public that the proper metal worker had not been employed to execute the work, the man who should have done it being no other than his own son. How true this story may be, we will not undertake to say, but that the things can be unscrewed we will certainly aver, and without the aid of a screwdriver.

It is really painful to see the distortions and spasmodic flourishes so rampant in modern iron work, an extraordinary angularity and unexpected breaking or crossing of lines, which in the cant of the craft is called "go," but which is really nothing more than a little sensational vulgarity, showing neither art nor skill, and perfectly different from the beautiful works of the Middle Ages or of the early revival.

A wrought-iron rood screen is something to be thought of with terror—such hard wiry lines, plates cut into hugh coarse crisps, and great rosettes stuck at all points; whilst gates, door-hinges, and railings have not escaped the contagion, and "go" abound in them all. There are, nevertheless, some most pleasing exceptions, as, for example, the beautiful work at S. Peter's, Vauxhall, enclosing the chancel; or the magnificent hinges to the west doors of Ely Cathedral, which for size and elaboration are not surpassed by any of the Mediæval works in this country.

We have now said enough to show that the condition of art metal work is not at present so eminently satisfactory that there is not great room for improvement; but so long as men are satisfied to copy each other instead of going to the fountain-head for inspiration, so long shall we have vulgarity instead of originality, and false treatment instead of "true principles."

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LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.—A general meeting of this society will be held at the hall of the Leathersellers' Company, S. Helen's-place, City, on Thursday next, the 4th May, when the following papers will be read:—"Remarks upon the Charters, Records, and History of the Leathersellers' Company," by Mr. W. H. Black; "The Hospital of Le Papey, Bishopsgate," by the Rev. T. Hugo. Numerous drawings, prints, &c., of Leathersellers' Hall, and the neighbourhood, will be exhibited by Mr. J. E. Gardner. The society will then proceed to the Church of S. Andrew Undershaft, when the following papers will be read:—"A Brief Notice of the Celebrated Painter, Hans Holbein, as a Parishioner of S. Andrew Undershaft," by Mr. W. H. Black;" "Remarks upon the Records of the Church," by Mr. W. H. Overall. From thence the society will go to the Church of S. Peter, Cornhill, where the rector, the Rev. R. Whittington, M.A., will make remarks upon the history of the church and the archives of the parish. — At the ordinary evening meeting held on Monday week, at the University College, Gower-street, Mr. Birch read a paper "On an Ancient Timber-house in Lime-street," and Mr. H. F. Holt exhibited and described a collection of personal relics, formerly belonging to Gustavus, King of Sweden.

PARLIAMENTARY NOTES.

THE NEW SCHOOLS.—Mr. B. Hope on Friday last asked the Vice-President of the Committee of Council whether, considering the wide-spread inconvenience which was being felt throughout the country by the delay on the part of the Education Department in approving plans for new schools, he proposed to avail himself of additional professional assistance in their examination.—Mr. W. E. Forster said that the Government had taken power to obtain assistance in examining the plans of the new schools. Undoubtedly, there had been much delay, but that had not been owing to arrears in the architect's department, but to the number of applications which had to be answered. The department was working as hard as it could, and were getting as many persons to work as could be really employed to expedite the business.

METROPOLIS WATER BILL.—On the motion on Thursday week that this bill be read a second time, Mr. Collins complained of the delays interposed to the progress of so important a measure—a measure in which the ratepayers of the metropolis felt the deepest interest. If it was intended to make alterations in the bill such as the Government had made in the Gas Bill, he thought it would be better to withdraw it altogether, and ask leave to introduce another bill.—Mr. Harvey Lewis said the ratepayers of the metropolis ought to know when this bill would be brought forward for a second reading, and that it should not be put off night after night. He wished that the Government would fix a night for the bill.—Mr. Bruce agreed that the bill was one of such importance that full opportunity should be given to discuss it.—Dr. Lyon Playfair said the ratepayers of the metropolis would have to pay three millions of money more under this bill than was to be appropriated altogether for the abolition of purchase in the army, and he thought it most desirable that time should be given to discuss the measure.—Mr. Craufurd said if the Government were going to make alterations in the bill, the best course would be to withdraw it altogether.—Mr. Shaw Lefevre considered the measure a favourable one, as the compulsory power was given up, while the permissive power was retained.—The second reading of the bill was then postponed.

THE ALBERT MEMORIAL.—Mr. Hardcastle gave notice of his intention to ask the First Commissioner of Works whether the unsightly iron bars lately fixed between the arches of the Albert Memorial were permanent or temporary, and whether there was any truth in the report that the columns were bulging outwards so as to endanger the safety of the construction.

THE NEW FOREST.—Mr. Baxter promised Mr. Fawcett that every care should be taken to prevent vent anything being done in the New Forest which would be likely to affect the decision of Parliament. He did not think, however, that it would be expedient to interfere with the inconsiderable amount of felling which was now going on.—Mr. Fawcett gave notice that he would on an early day take the opinion of the House as to the expediency of permitting timber to be felled in the New Forest.

HAMILTON GARDENS.—Mr. C. Denison intended at an early day to ask the House whether the opening of the new street from Hamilton-gardens northward did not offer a fitting opportunity for restoring Hamilton-gardens, which were properly a part of Hyde-park, to public uses.

WATER SUPPLY.—Mr. Kay-Shuttleworth gave notice for Monday, May 23, to call attention to the reports of two Royal Commissions on the subject of water supply and the pollution of rivers, and to move that the water supply of London should be derived from pure sources, and be supplied on the constant system.

THE EFFLUVIUM IN ST. JAMES'S PARK.—In answer to Mr. Monk, Mr. Ayrton said that his attention had been called to the presence of an offensive effluvium in the basin of the ornamental water in St. James's-park. He had gone there to judge for himself, and had failed to discover that effluvium. He believed that it was in consequence of the mud having been covered with lime. The whole would shortly be cleared away.

METROPOLITAN WATER BILL.—In answer to Mr. Crawford, Mr. Bruce stated that he would not proceed with the above bill after eleven o'clock that evening (Tuesday). He would take into consideration the suggestion for withdrawing it and proceeding with another bill.

NEW ROUTE TO INDIA.—Sir G. Jenkinson gave notice for the 23rd May to call attention to a proposed plan of establishing a new route to India by way of the Euphrates Valley.

THE LAW OF LAND SETTLEMENT.—Mr. Wren Hoskyns called attention on Tuesday to the injurious effect of the present law of land settlement, and moved a resolution declaring that it is opposed to public policy, by diminishing the investment of capital in the soil and preventing the freedom of sale and purchase. He attributed the evils of our land system to our practice of long settlements and entails for twenty-one years beyond the life of living persons. Where this prevailed the Courts required evidence of a title for a long time back; hence the difficulties and complications of sale and transfer. The obstacles to the distribution of land, and its natural tendency to aggregation, were thereby increased. He maintained that there was no reason in the nature of things why men of small as well as of large means should not invest in land, and he anticipated considerable improvements in agriculture from a change in our practice.—Mr. W. Fowler, in seconding the motion, made an elaborate speech against our land system, maintaining that the interference of the law with the natural devolution of land restricted its adequate cultivation and the productive powers of the people. He was for abolishing life tenancies altogether, and having land held entirely in fee simple. Limited owners, he asserted, had neither power nor motive to spend money on the land, to build cottages, or to effect other improvements.—Mr. Beresford Hope objected to the resolutions as the first step towards making land a mere instrument of earning money, and as tending to the destruction of the residential sentiment. Entails, and the desire to found a family, he argued, contributed more to the advantage of all classes of rural society than dealing with land in the spirit of speculation.—Mr. Jessel denied that settlements and entails prevented the granting of leases or the multiplication of holdings, or the building of cottages. These things depended on the disposition and means of the owner, not on the character of his ownership, and if every limited tenancy were turned into a fee simple to-morrow the owners would act just in the same way. He pointed, too, to the great selling value given to the land by the possibility of transmitting it to descendants.—Mr. Gregory took much the same view of the motion, but Mr. Dent was in favour of simplifying the sale of land in the interest of poor owners.—Sir Roundell Palmer admitted that such subjects as the simplification of titles, the length of settlement, and the "horrible incubus of conveyancing" well deserved consideration, and he should be glad to see them embodied in a bill. But these were not the times, considering the strange doctrines about property in land which had found favour in high quarters, to deal with such questions with vague resolutions. Touching cursorily on the merits of the case, Sir Roundell pointed out that life tenants could borrow money for permanent improvement, and dwelt on the advantages of family estates to all classes.—Mr. Pell maintained that land, including suburban freeholds, was divided into a larger number of parcels than ever, and referred to the services of younger sons in colonisation.—The Attorney-General, in urging the withdrawal of the motion, mentioned that the Lord Chancellor had prepared a bill to facilitate the transfer of land (which would be brought in next session), and a bill for administering the real estate of intestates. But the matter was not one to be dealt with in an abstract motion, which, by the way, did not include settled personalty.—Mr. Wren Hoskyns declined to withdraw the motion; and, after some observations from Mr. Gladstone and Mr. Ackland, it was negatived on a division by 79 to 49.

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WATER SUPPLY AND SANITARY MATTERS.

SEWAGE UTILISATION AT NORWICH. — The sewerage works for the city of Norwich are completed, and on Monday week, for the first time, the sewage was delivered on to the land at Kirby Bedon Farm. All engineering difficulties have now been set at rest. The sewage is conveyed from the pumping station at Trowse in iron pipes, laid under and along the Kirby-road. For the reception and utilisation of the sewage the Corporation now hold under lease 1,293 acres, of which it is proposed to place ninety under sewage at once. This will be done by means of an open duct or carrier running across the farm above the level of the land, with subsidiary ducts, provided with sluice gates at certain distances. The land is sown with Italian rye-grass. The works have been carried out under the direction of Mr. Morant, the Engineer to the Corporation.

UNHEALTHY CONDITION OF LIVERPOOL. — Liverpool bids fair, according to the *Food Journal*, to become the unhealthiest town in England, if it is not so already—the death-rate having latterly risen to 50 in 1,000; so that the Health Committee has its hands full. The principal object of the Commission which is now sitting is to examine the foundations of the houses of certain districts, some of which are composed of cinder refuse from the ashpits, and others of chemical refuse; so that, added to the chronic dirt and bad drainage, there are the distinct evils arising from the exhalation of deleterious gases. The small-pox, which is terribly rife in Liverpool, is propagated, *inter alia*, by the fondness of the Irish population for wakes, which, with the accompanying whisky and drunkenness, are constantly being held in the room with the corpse, no matter what has been the cause of death. It is mentioned in the *Medical Times* that a child died of small-pox, and that the mother immediately placed the corpse on the table, and marched off with the sheets and blankets, just as they were, to the pawnshop!

Building Intelligence.

CHURCHES AND CHAPELS.

Birmingham.—On Monday the memorial stone of the new Handsworth Congregational Chapel was laid. When the work which has been commenced has been carried out, the chapel will be extended in length by 30ft., and it will have a new front of best brick, with stone dressings, in the Byzantine style. The edifice will be entered by a vestibule, in which there will be porches to the floor and the galleries. The whole of the flooring will be reseated with open seats of deal, stained and varnished. Mr. G. Engall, Temple Row West, is the architect, and Mr. Stokes, Wheeley's-road, Edgbaston, the contractor. The contemplated outlay is nearly £2,000.

Birmingham.—On Wednesday week, Lord Leigh laid the foundation stone of S. Cuthbert's Church, Winson Street, Birmingham Heath. The edifice will accommodate about 800, and it will consist of nave, north and south aisles, chancel, vestry, north-eastern tower, and turret. The nave will be 80ft. long, 27ft. 6in. wide, and 52ft. high to the ridge, with the clerestory, the roof being open-timbered, boarded, and covered with slates. The aisles will be 12ft. wide, and will be divided into five bays by stone arches upon Mansfield stone piers, each bay being lighted by a three-light window, with traceried head, surmounted by gables, a picturesque effect thus being given to the exterior. The chancel is to be apsidal, 27ft. 6in. inside,. and lighted by three three-light gable windows. The tower will be 93ft. high, and is to form one of the principal entrances. The building will be of brick, with Bath stone dressings, and the style Early Decorated. The architects are Messrs. Bateman and Corser, Birmingham, and the contractor, Mr. W. Matthews. The estimated cost, exclusive of the tower, is £3,100.

Bradford.—The erection of the Sion Jubilee Memorial Chapel and Schools is to be proceeded with immediately. The body of the chapel is in plan a parallelogram, 80ft. by 68ft., and is intersected by four aisles, all of which converge on the baptistry. The chapel will comfortably seat 1,200 adult hearers. Behind the chapel, on the ground floor, spacious school accommodation will be erected. On a semi-basement story, under a portion of the school buildings, will be found an excellent dwelling-house for the chapel-keeper; also the heating apparatus, coal store, and other conveniences. The roof of the chapel will be in one span, and the relative proportions of length, breadth, and height have been carefully considered with a view to good acoustic effect. Externally the chapel and schools will form a group, designed in a simple yet bold and effective style of Italian architecture. The openings are all square-headed, and the estimated outlay, including the grounds, will be about £12,500. The superintendence of the work is in the hands of Messrs. Lockwood and Mawson, architects, whose designs were selected in a limited competition.

Brampton.—Brampton Church, Norfolk, was re-opened on the 13th inst. after complete restoration, the church having previously been in a most deplorable and unsafe condition. The south and west walls have been rebuilt, a new roof put on, all the walls re-plastered, and the whole church re-floored and re-seated. The chancel has also had the north wall rebuilt, and has been re-roofed, re-floored, and re-seated. The church is paved with Staffordshire tiles, and the seats, being open benches, are of stained deal. The windows are glazed with cathedral glass. The original character of the church has been, as far as possible, preserved. The whole of the work has been carried out in a substantial manner by Mr. Chapman builder, of Hanworth.

Bristol.—On Saturday week, the Green Bank Cemetery, Bristol, was consecrated by the Bishop of Gloucester and Bristol. The cemetery is situated at the junction ol S. George's and Stapleton parishes, and is nearly 20 acres in extent, eleven of which are at present set apart for burials. The cemetery is laid out on a hill, the top of which is in the midst of the enclosure, and advantage has been taken of this to form roads and paths winding round the hill. Each walk or road will be known as an avenue, and planted in accordance with its name, as, for instance, Oaktree Avenue, Cypress Avenue, Laurel Avenue, Cedar Avenue, &c. The ground has been planted by Mr. John Nelson, of S. Michael's Hill, under the supervision of Mr. Parker. The chapels are placed near the summit of the hill, the land declining from them in every direction. There are two chapels, one for Episcopalians, and one for Nonconformists. They are connected by corridors, in the centre of which is a campanile, or bell tower, 90ft. high. A mortuary and post-mortem room are provided. The works have been carried out by Mr. William Brock, contractor, of Temple Meads, at a cost, including land, of £12,000, under the direction of and from plans by Mr. Henry Masters, Architect, of Park-street, Bristol. The stone carving and sculpture has been executed by Mr. T. H. Margetson.

Ceylon. — Bishop Claughton consecrated on Tuesday, the 21st of February, the church of All Saints, Galle, Ceylon. The church is a cruciform structure of considerable size, being 120ft. in length, 80ft. in width across the transepts, and over 50ft. in height from the floor of the nave to the ridge of the roof. The whole church is built of granite and coral, and is, in some places outside and throughout inside, plastered. The style is early French Gothic.

Great Waltham. — On Thursday week the Bishop of Rochester consecrated a new church at Great Waltham, Essex. The building has been erected by Mr. Brown, builder, of Chelmsford and Bocking, from the designs and under the superintendence, of Mr. Chancellor, architect, Ipswich, the cost being £2,500.

Hanley.—The tender of Mr. Matthews, of Hanley (£640), has been accepted for the enlargement of the chancel of S. John's Church, and the work has been commenced. The chancel will be advanced to within a short distance of the railings, and will be flanked by a vestry and an organ chamber. Messrs. Palmer, architects, of Hanley, have supplied the design, which is Gothic, and the work will be executed in brick and stone.

Huxham.—The parish church of Huxham, dedicated to S. Mary, was reopened on Tuesday week, and re-consecrated by the Lord Bishop. The building is Decorated in style, and consists simply of nave and chancel (the one being divided from the other by a late Norman arch), south-west porch, and small bell turret, the latter being surmounted by a gilded vane. It has been entirely rebuilt, with the exception of the chancel, which was restored four or five years since, from the design of Mr. J. Hayward, architect, Exeter. The exterior walls are built mostly with mixed stone that came from the old building, and the roof is covered with slate, red ornamental tiles running along the point. The interior walls are built of Thorverton stone. The building is capable of seating about a hundred people, and the cost of the restoration will be about £500. The architect is Mr. B. Ferrey, F.S.A., London, and the builder is Mr. Inch, of Crediton. The wood and stone carving is by Mr. Harry Hems, of Exeter. Messrs. Hart, Son, Peard & Co. supplied the brackets for the reading desk, and Messrs. Cox & Son the lectern. A remarkable feature in the church is the ancient font. It is a very fine Late Norman example, and has been restored by Mr. H. Hems. This extremely interesting old relic, dating just after the Norman Conquest, has been found to consist of one block of Beer stone, a soft white material. The whitewash and paint of ages have been removed by the agency of chemicals, and now the ancient Norman masonry stands out sharply and freshly. The cut of each tool mark is clearly visible on close examination, and it is curious to notice that the surface, instead of being rasped or "dragged" over, as is now the universal and recognised custom with the local masons, is "tooled" in a manner similar to the way stones are "dressed" in the north of England.

Liverpool.—To meet the requirements of the growing population of Walton-park, Liverpool, a new Congregational school-church has been erected, and will be opened on Sunday next. The building, which will seat about 200 persons, has been built from the designs and under the superintendence of Mr. Hy. H. Vale, F.R.I.B.A. It is built of ornamental banded and coloured brickwork, with white stone dressings, the style adopted being the Gothic of the twelfth and thirteenth centuries, freely treated to suit the local materials. The sole contract was executed by Mr. H. Sharrock, of Rice-lane, Walton.

Mansfield.—The ancient church of S. Peter's, Mansfield, was on the 14th inst. reopened, after undergoing a complete restoration. The works have been carried out, at an estimated cost of £3,636, by Messrs. Cave and Halliday, of Greetham, under the supervision of Mr. W. Smith, architect, of John-street, Adelphi, and comprise the entire repair of the masonry inside and out, new roofs throughout the church, new floors bedded on concrete, new tracery and glass to all the windows, heating apparatus, &c.

Newark.—The foundation stone of the new church (dedicated to S. Leonard) now erecting at Newark was laid on the 13th instant. The total cost of the edifice will be £4,000. The design and plans are by Messrs. Evans and Jolly, of Nottingham; and Messrs. Hodson and Facon, of that place, are the contractors for the fabric, the foundations having been laid by Mr. Fretwell, of Newark. The is Early Decorated in style, and it will consist of a nave 72ft. by 25ft., north and south aisles 72ft. by 11ft., chancel 30ft. by 25ft., with chancel aisles for organ and accommodation for children. There will be 600 sittings. Ancaster stone is used for the exterior walls.

Plumbland.—At Plumbland, near Aspatria, a new church has been erected. It is of white stone, from the Tallentire quarries. The arches are alternately of red and white, supported on columns of white stone. One or two prominent features of the old church have been preserved in the inside, an old Norman chancel and a Gothic window in the transept being the most noticeable. The church will seat about 400 persons. Pitch pine has been used throughout the church, with the exception of the furnishing of the chancel, which is of oak. The architects were Messrs. Cory & Ferguson, and Mr. Graves the builder.

Restoration of Christ Church Cathedral, Oxford.—The vacation has not been wasted by the dean and chapter of Christ Church, and the restoration of the cathedral, has been considerably advanced. The south transept is now visible, and instead of being blocked up, as formerly, by the organ and vergers' rooms, one now looks upon the external wall, the window in which is very fine, but is, unfortunately, spoilt by the present flat roof, which hides the upper part of the arch. An open Perpendicular roof, it is stated, is to be substituted for the present flat one, and this will be a great improvement. The two rooms formerly used as quarters for the vergers, beneath this window, have also been restored, and good stone substituted for whitewash and plaster. The organ, which is undergoing repair, will be placed at the west end against the great west window, and the present screen moved back some way westwards, which will thus give more accommodation to the undergraduate members of the house, who are rather crowded at present. The stalls and seats are to be rearranged, and will probably be all new; those for the dean and canons are to be moved further up beyond the place now occupied by the choir. There seems to be a prospect of one or two new painted memorial windows, which will somewhat tone down the present glare from the recently-cleansed white stone of the walls and pillars, and the east window appears to be the first that should be filled in. The cloister running along the south side of the cathedral, as also along the canons' houses, is undergoing restoration, which it sadly stood in need of; the quadrangle has been lowered 2ft. or 3ft. to its original level, so that when finished the entrance to the cathedral will be effected by several steps.

Salop.—On Wednesday, April 12th, a new church for the township of Clunton, in the parish of Clunbury, Salop, was opened for Divine service. It has been built from the designs, and under the superintendence of Mr. T. Nicholson, F.I.B.A., of Hereford, the diocesan architect. In style it is Early Decorated, and is built with native stone externally and internally, relieved both inside and out with freestone dressings; the interior work being fair hewn and neatly set. The roofs are framed with open timber work, boarded on the upper side, and finished with ornamental cornices. The entrance doorway is protected by a timber porch, and the western gable is surmounted by a bell cote. The floors are laid with plain tiles in the body of the church, and in the sanctuary with ornamental encaustics. The sanctuary contains a carved credence, constructed in the north wall, also a sedilia and piscina in the south wall. The roofs are covered with Broseley tiles, and the gables are terminated with metal crosses.

South Scarle.—On Easter Thursday, the re-opening of the parish church of South Scarle after restoration took place. The structure, which possesses excellent specimens of the twelfth, thirteenth, fourteenth, and fifteenth centuries, had long slumbered in whitewash and decay, to the former of which it is doubtless owing that the stonework has been well preserved, the arches having come out of their incrustation almost in their pristine colours, and with all the delicate marks of the workmen's chisel upon them. A noble Norman arcade, richly ornamented with the cable and other devices, is a striking feature, and too little known. The chancel is pure Early English, with eight lancet windows; two being in the east end. Both church and chancel have been well restored, the former by Mr. Buckeridge, of Oxford and London; the latter by Mr. Christian. The cost has been about £1,000.

Tattenhall.—On Wednesday week the memorial stone of a new Congregational church was laid at the village of Tattenhall, near Chester. The new church, the walls of which are now nearly built, is situated in the centre of the village, fronting towards the east. It is a neat stone structure of the Gothic style, from the designs of Mr. T. M. Lockwood, architect, of Chester, affording sitting accommodation for about 270 persons on the ground floor. The building contains also a vestry at the west end, and is approached from the front by two porches with vestibules. There is a large, handsome, traceried window at the front, and five windows, containing twelve lights, at each side. The total height to the apex of a high pitched roof is about 40ft., the interior being ceiled a short distance below the junction of the principals. Buttresses between the side windows serve to give additional strength to the building.

Walworth. — A new church dedicated to S. Stephen, situated in Villa-street, Walworth-common, was consecrated by the Bishop of London on Friday. The style of this structure is described as Italian Gothic, and the plan consists of a nave 81ft. long by 30ft. wide, with side aisles and a chancel, terminating with a three-sided apse. The roof is groined, having moulded stone ribs supported on clustered shafts, surmounted by richly-carved caps. At the sides of the chancel are two tiers of windows, glazed with tinted cathedral glass. The nave, which is surmounted with a close boarded, arch-shaped roof, is divided from the aisles by four Portland stone columns, with elegantly carved capitals, which support lofty, well-lighted clerestories. The edifice is constructed of brick, with Bath stone dressings, and sittings (all free) are provided for 750 (including the west end gallery) worshippers. The total cost, including the site on which the church stands, is about £7,500. The builders were Messrs. Tarrant, the architects Messrs. H. Jarvis & Son, Southwark.

BUILDINGS.

Bradford.—The new schools which have recently been erected in connection with S. Thomas's Church, Cropper-lane, Bradford, were formally opened last week. The principal front is towards the church, and the style of architecture adopted is in harmony with that of the church itself. The front part of the building consists of a large room, 146ft. long and 20ft. wide. This serves as a boys' and girls' school, being divided with a moveable wooden partition. In the rear of this is the infant school-room, 48ft. long by 20ft. wide, with a sliding gallery at each end. All the rooms have open-timbered roofs, and the interior walls are lined with pressed brickwork. The schools will, it is expected, accommodate 730 children. The entire cost has been about £2,500. The architects are Messrs. Lockwood & Mawson, of Bradford, and the contractors Messrs. Ives & Son, of Shipley.

Dublin.—New premises for the English and Scottish Law Life Assurance Association have lately been erected in Lower Sackville-street, Dublin. The style adoptede is Italian, the material employed being Portland stone. Mr. W. Stirling is the architect, and Messrs. Cockburn & Son were the contractors. The carved work was executed by Mr. C. W. Harrison.

Glasgow.—A new model lodging-house in Drygate, Glasgow, erected by the City Improvement Trustees, has recently been opened for the reception of lodgers. It consists of four stories, the upper three of which are to be used as sleeping wards, while on the street flat are, on one side, the superintendent's quarters, and on the other the dining-hall, with a kitchen and scullery in rear, hot-plate and heating apparatus. On each side of the three upper flats there is accommodation for forty-eight lodgers. Each flat is divided by a middle passage or lobby into two wards, with two doors to each ward, opening respectively on compartments having bunks for twelve persons. The bunks are of wood, with the exception of those in one of the wards on the second floor, which are of galvanized sheet iron, and will probably be set apart for casual visitors. At the farther end of each passage conveniences are placed, and half a dozen cast-iron lavatories are provided for each flat in the recesses off the staircases.

Gunnersbury.—A range of four new vineries has just been erected at Gunnersbury Park, Acton, the seat of Baron Lionel De Rothschild, M.P., by Mr. James Gray, of Chelsea. The range is large and lofty, and great space, airiness, and abundance of light is secured. In point of elevation it is a lean-to range, with a steep half-span at the back to give the requisite height. The length of the four houses is 160ft., each being 40ft. long by 30ft. wide, inclusive of a broad paved way 6ft wide, running the entire length of the houses. The sloping roof of glass is 26ft. wide from the eaves to the apex, and the depth of the half-span at the back is 10ft. Of the 26ft of sloping roof, the upper 8ft. is formed of sashes of that depth, and these can be lowered for top ventilation when requisite. Ventilation at the bottom is obtained by means of a line of sashes in front of the house, opening outwards. The houses are heated by means of hot-water pipes. The total cost is estimated at £1,600.

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TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—W. H. L., H. J., jun., W. J. N., J. S., J. P. S., E. W., C. B. A., W. E. D., E. C., P. E. M., G. G. Z., S. and Son, E. W. G., E. E. E., Surveyor No. 3, Plato Junior, Entasis, W. E., J. H., E. L. G., W. W., G. E. S., J. H., S. Brothers, G. N.

W. T. S.—What numbers do you want?

P. E. M.—In our notice of the Hancock process of engraving we said that the original view of the Hotel de Ville, Ghent, was lithographed. This is a mistake, though, perhaps, not one of any importance. It was etched on copper.

J. H.—Please send drawing.

Correspondence.

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ARCHITECTS' CHARGES.

To the Editor of the Building News.

Sir,—The letter of Mr. Morris in yours of the 14th inst., and that of "F." in yours of the 21st inst., are interesting, as showing the profound ignorance that prevails amongst architects as to their legal rights. Mr. Morris seems to regard it as preposterous that an architect should be paid in full for work which he has entered upon, and is quite willing to complete, but which the employer, from some caprice or other, chooses he shall not complete. On his principle it is equally preposterous for an employé to look for his salary to the end of his term if dismissed before it, or for a landlord to require a quarter's rent from a tenant who leaves in the middle of the quarter. When architects are relieved from such every-day liabilities, it will be time for them to think what corresponding indulgence they are to extend to the public.

One of our most eminent architects not long ago asserted this claim against the Government, and also, in a well-known case, against the committee of a parish church, the consequence of which was that in both cases the intended dismissal was reconsidered, and the architect allowed, as he ought to be, to finish his work and earn his money. When employers find that they cannot dismiss architects without proper compensation, they will be more careful not to act so arbitrarily and capriciously as the client of "An Ill-used Architect" seems to have done.

The case of Phipps against Robertson, quoted by "F.," is not by any means to the point. Mr. Phipps's employment never went beyond the preparation of plans—no contract having been entered into upon them, or superintendence commenced, as in the case of "An Ill-used Architect." Had a contract been taken on Mr. Phipps's drawings, with his name mentioned in it as the superintending architect, and had the work partly proceeded under his superintendence, I rather think he would not be fool enough to let the work be placed in other hands without seeking his proper remedy. Moreover, that case was only tried in a county court, and as the plaintiff recovered in full all he sought for, it does not in the least disprove anything in my previous letter. It often happens that architects, from ignorance of their real rights, only claim part of them. This was notably the case in Ebdy *v.* M'Gowan, in referring to which Mr. Baron Bramwell, not at all inclined to side with the architect, intimated pretty clearly that his proper remedy would have been by an action for wrongful dismissal, in which he should sue for the full 5 per cent., and not by an action for work and labour, in which he claimed but 3 per cent.

"F.' very absurdly asks, "If the architect had received the full amount, what would have reimbursed him who might some day have to complete the work?" I answer, "That is the employer's own look out." If he choose to dismiss his architect in the middle of his work and have another, let him pay for his caprice. For my part, I should be very little inclined to take up work from which another architect had been unreasonably dismissed, on any terms, and it would be more creditable to our profession generally if that principle were more frequently adopted. Architects are not immortal, to be sure, and if a brother architect were to die in the course of his work, I should be quite ready to take up the business, and complete it for a fair proportion of the 5 per cent., and arrangements of this kind are common enough between executors and clients; but a case of dismissal while the original architect is alive and healthy, and moreover, ready and willing to complete his work, is a very different thing.—I am, &c.,

F.R.I.B.A.

BUILDERS v. ARCHITECTS AND CLIENTS.

Sir,—Your correspondent "Surveyor No. 1" gives the public the benefit of his experience by showing up the tyranny which is too common amongst architects, and is fast making the profession odious to both proprietors and builders. I am fully convinced that two-thirds of builders who become bankrupts can trace their fall to the unjust ways of architects under whom they work. Within the last four years I have been called in to measure up the work of three contractors who stopped payment, and the cause of two stoppages was deficient quantities, which the contractors had no means or any idea of finding out until too late. And deficient quantities I have always found are those supplied by the architect to the same contract, who would rather descend to tricks, and even fraud, than hand over the work of taking out the quantities to honest disinterested building surveyors. I would not be so hard upon my brother architects if I found them willing to recoup the contractors when found out with false quantities, but this act of justice they never do until legal proceedings are taken against them. One instance in my experience showed clearly enough that architects will resort to acts of tyranny to compel builders to yield to their unjust requirements, where a piece of work had been condemned which the clerk of works had allowed, with which other architects found no fault; but after the builder explained that the architect had quarrelled with him because he would not allow him to pay for materials, and so pocket the builder's legitimate profit, his bad motives became very transparent. If these acts of unfairness towards builders were of rare occurrence I would not mention them to throw discredit upon the profession, but they are often recurring, as your correspondent "Surveyor" proves, and do more to reduce the respectability of the profession than anything else, and cause many respectable architects to be suspected by both proprietor and builder; and it becomes the duty of everyone to expose such trickery that comes into their experience, and so benefit both architects and builders.

If architects will be honest they will find it the best way to teach builders honesty.—I am, &c.,

Surveyor No. 3.

Sir,—In reply to "Surveyor No. 2," I may say that several competent and impartial persons have pronounced the contractor's charges to be in strict accordance with the ordinary trade prices. With regard to the statement that "there are never any deductions," meaning, I presume, that there are never any deductions in contractors' accounts, it only goes to show that the case I have quoted must be a very honourable exception, as the deductions were large and numerous.

The last paragraph in his letter is quite unintelligible: "liquefaction" and "aquosity" have been, apparently, too much for him.—I am, &c.,

Surveyor.

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Self-Skimming Hot Metal Ladle. — An American has invented and patented a most convenient implement, in the shape of a ladle for pouring hot metal, such as lead, &c., which is furnished with an automatic skimmer, so that the ladle and its contents may easily be manipulated with one hand, leaving the other hand free. It is one of those simple inventions which are really of much value, though requiring little inventive skill for their contrivance.

Testing Gas in London.—The argand burner of Sugg is the official standard for the measurement of gas in London. The burner for testing the ordinary gas of the Gas Light and Coke Company, which ought to have 16-candle power, must be the London argand, No. 1, of Sugg, with a glass cylinder 2in. in diameter, and 6in. high. For the gas of the Imperial Gas Company and the South Metropolitan Gas Company, which must possess an illuminating power of 14 candles, the glass chimney may have $1\frac{3}{4}$in. diameter, and 6in. height. The chimney may be made 7in. tall if the flame leaps over the top.

Intercommunication.

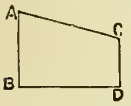
QUESTIONS.

[2207.]—**Cemetery Chapels, &c., Tunbridge Wells.**—Can any information be given as to the result of this competition?—A Stakeholder.

[2208.]—**Rain Water Tanks.**—Upwards of a year ago I had a large rain water tank formed under the floor of my kitchen. It was constructed in the usual way, and is perfectly water tight. The walls were built with brick, and the inner surface lined with Roman cement. The water, however, after it has remained in the tank two or three days, becomes so hard that it is quite unfit for washing purposes. Can any of your readers suggest any means for preventing this change in the water?—E. F.

[2209.]—**Church Architecture.**—Are the churches of Somersetshire finer, as a rule, than those of any other county? Which is the finest west front, Wells or Exeter? Answer will oblige.—Steve Shute.

[2210.]—**Problem.**—Can the following problem be solved geometrically? A B C D is a field. The sides A B, C D are parallel to each other, and at right angles to the base B D; but are of unequal length. It is required to divide the plot into two equal parts by a line drawn parallel to A B and C D.—Land Surveyor.



[2211.]—**Schools of Art.**—Will some one inform me when the competition drawings recently sent to Kensington will be on view at that place? By so doing you will greatly oblige a great many more competitors, who are anxious to go and see them this summer.—R. J. Rodhurst.

[2212.]—**Hand-Railing.**—Would some practical reader of the Building News kindly define the difference between a "Vandyke" and a "stop" joint in a staircase hand-rail? I fail to find the terms in an architectural dictionary.—G. T.

[2213.] — **Satin Wood Boards.**—I shall feel much obliged if any of your correspondents will favour me with advice under the following circumstances. In the south of India, about twelve months ago, a large ball-room floor was laid with satin wood boards, 5in. wide and 1½in. thick, grooved, cross-tongued, and nailed at the edges. It was supposed, at the time, that the boards were well seasoned; but that could not have been the case, as they have shrunk to an extraordinary extent, and look most unsightly. Of course the best plan to adopt would be to take up and relay the whole floor, but that would involve considerable expense and inconvenience to my clients. I am, therefore, anxious to fill the joints with a stopping which will match the boards in colour, be easily run into joints which are not parallel or of uniform width, and which will not shrink. It should not be brittle, as dancing upon the floor would cause it to come out; and, as glue will not set in this climate, that should not be one of the ingredients. I thought of satin wood sawdust as the base of the composition; but it would have to be mixed with something to form it into a paste, which would harden when dry. It should also yield to the plane when the floors are smoothed. The ingredients used should also, if possible, be procurable in this country.—W. D. M., Ceylon.

[2214.]—**Practical Construction.**—Will some one kindly oblige by giving the simplest course for a practical man to acquire knowledge for calculating the strains, for determining the proper sizes of materials used in construction, timber, wrought and cast iron in columns, girders, &c., or a work suitable for clerk of works.—Aspirant.

[2215.]—**Precedents of Reports.**—Will any one tell me whether there is a book of precedents of Reports on Buildings published? Mr. Donaldson's "Handbook" deals only with specifications.—A Student.

[2216.]—**Duties of Land Agent.**—Will you or any of your readers kindly recommend to me some book on the valuation of property and the duties of a land agent? Also state the price. I want, if possible, to get a cheap one.—Surveyor.

REPLIES.

[2172.]—**Competition.**—For the information of "G" and all whom it may concern, I have since ascertained that "Fortune's Fair Smile" *primo* (in the matter of the Victoria Hotel, Coatham, Redcar) was bestowed on Mr. R. G. Smith, Hull; *secondo*, on Mr. Blessley, location unknown. Number of competitors not stated. I am grieved to learn that a fortnight was wasted previous to the inspection, as the consumption of "midnight oil"—mitigation denied—might have been avoided. A curt expression of sorrow for non-success, and an apprisal of the return of the drawings was, in this case, likewise awarded. To this may be added the gratification of defraying the cost of dual transit. Will the premiated designs appear in this publication?—F.

[2175.]—**Drilling Holes in Glass.**—Use the Archimedian drill, with a blunt-pointed bit of copper or iron to the size of hole wanted. Then, with fine emery powder and water, drill your required hole.—Mason.

[2184].—**The Cymagraph.**—The question is still asked where can this instrument be obtained? It was invented by Professor Willis; he read a description of it at the Institute of British Architects, February, 1837, and it was illustrated in the *Civil Engineer and Architects' Journal* of that year. About 1840 I went with a drawing into a little mechanic's shop in St. Martin's-lane, to ask him to make it; he showed me one which he had made, if I remember, for Professor Willis. I purchased it, and this instrument is still in my possession. I should be happy to show it to any one wishing to see it, if he cannot refer to the above work. There is an objection to the instrument, hardly to be explained otherwise than with it in hand. Since writing the foregoing, I observe in the volume of the *Archæologia* just published (p. 90), that Mr. J. H. Parker, F.S.A., states that the cymagraph has been "perfected by Mr. Edmund Sharpe, of Lancaster." A letter addressed to him would most probably bring a reply.—Wyatt Papworth.

[2192.]—**Washing White Brick Houses.**—A reply to this query would oblige.—F.

[2195.]—**Brickwork on Paper.**—Rule joint lines with Chinese white.—F.

[2203.]—**Measurement of Glass.**—The questions of "S. S." on this subject invite the query he applies to the contractor (2204), "Is he entitled to consideration as a sane person?" What does he mean by plate glass being measured on the "longest line?" It is measured as all other ordinary glass, superficially. His question as to stained glass seems equally vague. And his statement that "when a price per foot is given, the method of arriving at the superficial contents is left to custom" is very funny. The custom happens to be the rule of multiplying the length by the breadth, the result being the superficial contents, about which there is very little indeed of the "weathercock."—W. W.

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LEGAL INTELLIGENCE.

A Claim for "Extras."—Hodgkinson v. Russell.—The plaintiff in this case (heard at the Clerkenwell County Court last week, before Mr. Gordon Whitbread, the judge) was a builder, carrying on business in the King's Cross-road, and he sued the defendant, residing at No. 11, Vincent-terrace, Islington, for £2 10s. 10d. for work done. The plaintiff deposed that at the defendant's request he did certain repairs to his house, and supplied the materials. The defendant first told plaintiff what he wanted done, and while the work was going on both the defendant and his wife gave directions for different things, which had been charged for extra. The defendant had paid £1 14s. on account, leaving a balance as above; 5s. 3d. had been paid into court. Upon cross-examination the plaintiff admitted that he sent in a bill to the defendant; that nothing was said about "extras" in this bill; that when the defendant paid him the £1 14s. upon account, it was agreed that the balance and "extras" were to stand over; and that it was at the request of the defendant that witness did not put the "extras" in this bill. The defence was that the work had never been completed, and that the sum paid into court was sufficient for what had been done. The judge said he believed the claim for "extras" was an afterthought on the plaintiff's part, and upon looking through the account and upon the evidence he thought only 5s. was due, and made an order accordingly.

Extensive Robbery of Building Materials.—At the Thames Police-court on Thursday last, John Regan, George Bush, John Bush, his son, and George Harber, labourers, were brought before Mr. Lushington charged with stealing and receiving, knowing it to be stolen, a quantity of wood and other building materials, the property of Mr. John Ratcliff, builder, of New-road, Mile-end. While the prosecutor (who held the post of registrar of births and deaths for the district of Mile-end Old Town) had been devoting his attention for several days to the preparation of the census-papers for his district, Regan, who had been in his employment for some time, had robbed him of the materials to a large extent, the two Bushes and Harber being the receivers of the stolen property. Mr. Ratcliff had been robbed of £25 worth of wood, besides window sashes, &c., and a good deal of the property was found in the possession of the prisoners.—Mr. Lushington remanded the case for a week.

Offences Under the Public Health Act.—William Lipscomb and William Reed, dust contractors, were summoned before Mr. Ellison at Lambeth Police-court on Thursday week by the Vestry of St. Giles, Camberwell, for not obeying former orders made by the magistrates of this court for the removal of an accumulation of dust and refuse prejudicial to the public health.—Mr. Besley prosecuted on the part of the parochial authorities, and proved that the accumulation in each case had not been removed since the month of November last, and that it was a great nuisance to the inhabitants and highly injurious to health. In both cases it was shown that a penalty of 5s. a-day had been imposed in November, but that had not caused defendants to obey the order. In the case of Reed it was proved he had stated he would rather pay £100 than remove the dust. Mr. Besley asked for the full penalty of 10s. per day in both cases, and that for a period of eighty days in each.—Mr. Ellison considered that there had been a wilful disobedience of the orders of the Court. He fined each defendant 10s. per day for eighty days, and made an order with costs.

Important to Land and Building Societies.—The Attorney-General v. Gilpin and Others.—This case, tried in the Court of Exchequer on Tuesday, was of considerable importance to building and land societies. It was a proceeding by the Attorney-General against the defendants for the forfeiture by them of two penalties of £50 each for paying two drafts without the same being respectively stamped; and, by order of Mr. Baron Martin, the facts had been stated without pleadings for the opinion of the Court.—The defendants were the trustees of the National Permanent Mutual Benefit Building Society, commonly called "The National Freehold Land Society," which was duly registered pursuant to the 6th and 7th William IV., c. 32, and they were the drawers of the two drafts in question. One Stephen Ranger, of Maidstone, was a member of the society, and the owner of one uncompleted share. On the 27th January, 1870, he sent a notice of his intention to withdraw the share, and on the next day the accountant acknowledged its receipt, and enclosed a form which he requested him to fill up and return. Ranger did this, and the accountant forwarded a draft filled up, but unstamped, which Ranger signed and paid away, and it was paid by the defendants to the holder. The following is a copy of the draft:—"National Freehold Land Society (registered as the National Permanent Mutual Benefit Building Society, pursuant to the 6th and 7th Wm. IV., c. 32).—£10 18s. 2d.—1st Feb., 1870.—On demand, pay to bearer £10 18s. 2d. out of the money standing to the credit of my shares, and payable to me pursuant to notice of withdrawal.—Stephen Ranger.—To the Trustees of the National Permanent Mutual Benefit Building Society, 14, Moorgate-street, London."—It was endorsed thus:—"Pay Smith, Payne, and Company,—Randall and Company, Maidstone."—The next case arose under similar circumstances, with this exception, that the draft was for interest due on a completed share. The same form of draft was used, and the words were:—"October 31, 1869.—On demand pay to bearer 12s. 1d. for interest on complete share account due to me this day.—R. A. Tanner." The practice of the society was to make advances to members upon the mortgage of properties acquired by them, to enable them to complete purchases, to build upon land, or to alter or repair existing buildings, and it also made advances to other persons as well as members upon the mortgage of real or personal property. The operations of the society were of a very extensive character. During the year 1868-9 the average amount on the society's books standing to the credit of members whose shares had been realised was £518,365, and the average amount on uncompleted shares for the same period was £581,111, while the amount of drafts drawn in the manner described for principal and interest by members was about £19,865. On the part of the Crown it was contended that the drafts, being payable to bearer on demand, were like ordinary drafts of that kind, and ought to bear a stamp; and the defendants argued that they were entirely exempted by the Friendly Societies Acts from the necessity of having stamps, and that consequently the Crown could not recover the penalties they now claimed.—The Court took time to consider their judgment.

A Builder in Fault.—At the Marylebone County Court on Wednesday, before A. Abbott, Esq., Deputy Judge, an action was brought by Mr. Charles Smith, plumber, painter, &c., of many years' standing, in Cochrane-street, S. John's-wood, on a bill of exchange for £20, against Mr. Peter Kellan, builder, Bristol-gardens, Bayswater, where he is likewise proprietor of the Sheldon Hotel, there situate.—Mr. Montagu Williams was counsel for the plaintiff; Mr. Clarke, solicitor, Paddington-green, acting for the defendant.—It appeared from plaintiff's statement that he had for years been acquainted and done work for defendant, who, in August, 1869, engaged him to fit up and finish, in his line, the requirements of four houses he was building in Bristol-gardens. On their completion, the amount owing him being £17, defendant gave him a bill of exchange for £20, including £3 for work previously done, which latter, however, having been paid since the commencement of this action, made the sum of £17 still only due.—In answer to his counsel, plaintiff said that the bill, on becoming due, was not honoured, and defendant referred him to a Mr. Tildesley, an extensive brick-maker, who offered him, in lieu of money, possession of some stables which he himself said he had taken of defendant as payment of an account the latter owed him. Those terms, however, he declined, and, being unable to obtain any money at all from defendant, he took these proceedings.—Mr. Clarke, in reply, said his client had made a deed of composition with his creditors, and Mr. Tildesley being one of the trustees was the cause of his sending plaintiff to him. The deed had certainly been made since these proceedings were taken.—Mr. Williams thereupon submitted that, as such was the case, it could not be accepted as a plea for the non-payment of plaintiff.—His Honour: Certainly not; and he should certainly not entertain it. The work, it was not denied, had been done, and must be paid for, he considering the defence an attempt to shuffle out of a just claim. His decision was for £17 and all costs.—Judgment so entered.

Our Office Table.

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INCREASING DEMAND FOR WHITE WOODS.—The *Gardener's Chronicle* remarks that the taste which has of late years been increasing for light—we might even say white—woods for bedroom furniture has to a large extent done away with the old system of painting and graining. Silver fir and spruce are now largely in demand for bedroom suites, and nothing can be more cleanly in appearance and pleasing to the eye than these simply polished unpainted woods. A similar good taste is also shown in the seats and other woodwork of modern churches, for where oak is too expensive common pine and pitch pine, simply varnished, are now largely used. The bold dark lines produced by the annual rings of the latter render it specially adapted for church work, and large quantities of the wood are now used in this country. It is supposed to be the produce of Pinus australis, and comes from the Southern States of North America. It is not a little remarkable that, even in Brazil, a country abounding in hard wooded timber trees, the pitch pine is largely used; indeed, it is preferred for building purposes. It is said that the turpentine with which it abounds prevents the attacks of the white ant; and, moreover, it can be obtained from the States of America, sawn to any required scantling, as cheap, or cheaper, than timber could be procured from the adjoining forests.

SUBWAYS FOR THE CITY STREETS.—In his report of the works executed by the Commissioners of Sewers in the year 1870, Mr. William Haywood, the Engineer and Surveyor to the Commission, thus refers to the question of subways:—Some important public ways were disturbed during the year by the Post Office authorities for laying down pneumatic tubes of the transmission of letters. I believe that further disturbance of the public ways of the City will take place for similar purposes; this, with other circumstances, points to the construction of subways in streets of large traffic, as a remedy for the inconvenience which results from opening the surface. Subways are already made along the Holborn Viaduct and Charterhouse-street, S. Andrew's-street, Snow-hill, and Queen Victoria-street, which latter street, however, is not yet given up to the Commission by the Metropolitan Board of Works.

STREET GUTTERS.—In connection with the subject of improvements in roadways, a suggestion has been put forward by Mr. Henry Carr, C.E., to the effect that the present plan of making the gutters at the side of the road and the best way in the middle should be reversed. He thinks that by this means the slow heavy traffic would be sent to the sides and the open space in the centre reserved for the lighter vehicles.

INSTITUTION OF SURVEYORS.—At the ordinary general meeting, held on Monday, March 27th, the following donations to the library were announced:—J. Rains' "History and Antiquities of North Durham," by C. J. Smith, Darlington; E. Millington's "Bibliotheca Massoviana sive Catalogus Variorum Librorum," 1867, by C. J. Shoppee; H. J. Morgan's Report (1870), on Sewage Irrigation at the Lodge Farm, Barking, by the author. The following donation to the Library Fund was announced:—E. Carritt, £2 2s. A vote of thanks was unanimously passed to the donors. A paper was read by Mr. H. J. Morgan, entitled "The Progress in Utilisation of Sewage, as Shown by Experience Gained upon the Lodge Farm, Barking." A discussion followed, which was adjourned to the next meeting, and a vote of thanks was unanimously passed to the author of the paper.

THE ALBERT MEMORIAL.—Some of the professional journals have been at the pains to contradict the statement which appeared in a suburban journal regarding the alleged insecurity of the Albert Memorial. One journal, in disproving the assertion, with rather more acerbity than seems necessary, afterwards excuses the offending journal by stating that "there is some justification for the statement after all . . . . . the structure presents the anomaly of one having arches which are really doing no work whatever as such." The arches have comparatively *little* to do, being, as is correctly enough observed, relieved by the two box girders, the ends of which at the level of the top of the spandrels are built into the masonry. It is, however, more than questionable whether our would-be sensational West End contemporary knew anything about this "anomaly," and whether after all it is fair to call it by that name. Arches may exist for other purposes than that of supporting weight.

BUILDINGS AS AFFECTED BY THE VIBRATORY MOVEMENT OF MATTER.—An American paper says that the following illustration of the vibratory movement of matter is attested by Professor Horsford:—"The top of the high tower which constitutes the Bunker Hill Monument inclines towards the west in the morning and the north at mid-day, and towards the east in the afternoon. The movements are due to the expanding influence of the sun as it warms, in succession, the different sides of the structure. A similar but more marked movement is produced on the dome of the Capitol at Washington, as indicated by the apparent motion of the bob of a long plumb-line fastened to the under side of the roof of the rotunda, and extending to the pavement beneath. This bob describes daily an ellipsoidal curve, of which the longer diameter is 4in. or 5in. in length. By molecular actions of this kind, Time, the sure but slow destroyer, levels with the ground the loftiest monuments of human pride."

A NEW THEATRE.—A company, which numbers among its shareholders the names of several well-known playwrights, has been formed for the purpose of purchasing a site in the City suitable for the erection of a theatre. Several properties were submitted to the directors, and they have finally selected a freehold block situated in Goswell-street, close by the Aldersgate-street station. For this site, which covers an area of over nine thousand superficial feet, they have offered the sum of £18,000, and should this offer be accepted they will proceed at once with the erection of a theatre and restaurant, after the model of the Gaiety Theatre in the Strand. The block, which is square, is admirably adapted for the purpose, having entrance accommodation in no fewer than four streets.

CITY ARCHITECTURE OF THE PAST.—But few of the quaint-looking gabled houses of the City of London now remain, and of these four or five are about to be removed; two, indeed, are almost demolished now, viz., 155 and 156, Aldersgate-street. One of these was, until very recently, in the occupation of Mr. Hurley, newsagent; the next was a coffee-shop. The other old houses about to be taken down are in Fore-street, at the corner of Milton-street. Lath and plaster are the principal materials of which all these houses are constructed.

THE INTERNATIONAL EXHIBITION..—The Commissioners of the International Exhibition have appointed Mr. T. Roger Smith Reporter on the Architectural Designs, Drawings, and Models exhibited under Class 4. The official reporters are, it is understood, to prepare a series of papers similar to those which were published relative to the Paris Exhibition of 1867.

WIMBLEDON COMMON AND SEWAGE UTILISATION.—The Wimbledon Local Board having recently petitioned the Home Secretary for powers to acquire compulsorily a portion of Wimbledon Common for the purpose of establishing a sewage farm, a large number of persons residing at Wimbledon, Roehampton, Putney, &c., memorialised the Home Office against the scheme, urging that the establishment of a sewage farm so near their residences would be prejudicial to health. The Local Board, in reply to their petition, have just received a communication from the Home Office, informing them that the Home Secretary cannot grant their request, inasmuch as the Legislature considers the open spaces and commons should be preserved as much as possible for the benefit of the public.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY. *Royal Institute of British Architects.* Annual General Meeting of Members only. 8 p.m.

TUESDAY. *Institution of Civil Engineers.* 8 p.m.

WEDNESDAY. *Society of Arts.* 8 p.m.

THURSDAY. *Society for the Encouragement of the Fine Arts.* 8 p.m.

FRIDAY. *Architectural Association.* Annual General Business Meeting, and Paper "On Canterbury." By Mr. E. C. Lee, A.R.I.B.A. 7.30 p.m.

Civil and Mechanical Engineers' Society. "Ornamental Cast Iron." By Mr. C. H. Driver. 7.30 p.m.

SATURDAY. *Museum of Practical Geology, Jermyn-street, St. James's.* Swiney Lectures on Geology. Lecture IX. By Dr. Cobbold, F.R.S. 8 p.m.

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San Francisco is to have a new City Hall that will be 576 feet in length. Four years will be required to complete it. In the centre of the building is to be an open quadrangle, 120 by 115 feet, with a fountain. Corridors will run all round this opening, communicating with the various offices.

The Bath Gas Company are having the roofs of their retort-houses raised, so as to permit of the entrance of trains from their new railway. One of these roofs, which had been lifted on supports, fell last week, just as twelve men were leaving it. The men escaped injury, but a large amount of damage was done.

Chips.

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Over twelve hundred churches were built in the United States last year.

Lord Charles Russell has granted permission to a distinguished artist, celebrated for his caricatures, to frequent the lobby of the House of Commons.

It appears that during the siege of Paris the asphalte pavement was largely used, both for fuel and for the distillation of gas to fill balloons.

The Prince of Wales will preside at the first annual dinner of the Artists' General Benevolent Fund, to be held at the Freemasons' Tavern on the 6th of May next.

A new company is formed, called the Brent Moor China Clay and Mica Works, for the purpose of turning to better commercial account the immense quantity of China clay in Devonshire. We shall have more to say about the uses of this clay in a future number.

On Thursday week Sir Francis Lycett laid the foundation-stone of a new Wesleyan chapel, which is about to be erected at Wood Green. This is the first of fifty chapels which the Wesleyan connection have determined to build in London and the suburbs during the next ten years.

A new and large coal depot is in course of construction at the back of the Walworth-road, between Hanover and Amelia-streets, in connection with the London, Chatham, and Dover Railway.

A new organ in Seale parish church, Surrey, was opened on Tuesday week. The instrument was built by Mr. W. M. Hedgeland, of Gower-street, London, at a cost of £150, and consists of one row of manuals, (56 notes), and an independent pedal organ (30 notes).

The west window of Worlingworth Church, Suffolk, has been filled with stained glass, as a memorial of the late Lord Henniker. The subject represented is Moses with the Tablets of the Law.

The Plumbers' Company have subscribed twenty guineas to the fund for the completion of S. Paul's.

A man was engaged last week in repairing the stone-work at the summit of Messrs. Hepburn's tannery chimney, Bermondsey, a height of about 180ft. The operation was commenced by flying a kite over the chimney, then a "Steeple Jack" ascended by means of a rope secured mast fashion.

PERSONAL.

Mr. C. B. Arding has been elected Surveyor of the parish of S. Bride, Fleet-street, London, in the place of his father, who has recently resigned.

Mr. J. S. Rawle, of the Nottingham Government School of Art, was recently elected a Fellow of the Society of Antiquaries.

Edward Simpson, better known as "Flint Jack," a notorious vendor of spurious antiquities, such as flint arrow heads, &c., has been committed to prison at Northallerton for a month, as a rogue and vagabond.

It is stated that Mr. Frost Creswick, an architect, and son of the tragedian, is about to go to Florence in connection with a great undertaking, which will probably detain him for two years.

Mr. W. Cave Thomas delivered a lecture at the Town-hall, Farnham, on Thursday week, entitled "To What End Shall we Study Art?" The lecture was given in aid of the establishment of local art and science classes.

The death is recorded of Mr. James Field Stanfield, second surviving son of the late Clarkson Stanfield, R.A., aged forty-one. Mr. Stanfield died on the 8th inst. at Buenos Ayres, of yellow fever.

Mr. Naftel, of the Old Water Colour Society, has been appointed teacher to the Water Colour Class in connection with the Architectural Association.

Prince Napoleon is reported to have given £20,000 for a house at Lancaster-gate, for which, with forethought, he contrived to save the choicest furniture, pictures, and objects of art that once glittered at Meudon and the Palais Royale. The Prince is also said to have sold his estate in Switzerland to Mr. Lucas, the well-known contractor, for £70,000.

The death is announced of Signor Francesco Paolo Palizzi, a Neapolitan painter, long settled in Paris. He died suddenly while on a visit to Naples.

A committee of the Institute of Architects met at the statue of Queen Anne in St. Paul's Churchyard on Wednesday week, to confer and advise with the Dean and Chapter as to setting back the railings at the western end of the churchyard. The members present included Mr. T. H. Wyatt (President), Mr. W. Burges, Mr. Talbot Bury, Mr. Christian, Mr. Cockerell, Mr. Godwin, Mr. I'Anson, Mr. Horace Jones (the City Architect), Mr. Pearson, and Mr. St. Aubyn.

In our report of the presentation of prizes, &c., at the Institute last week, Mr. Craven is mentioned as the winner of this year's Soane Medallion, whereas Mr. W. G. Davey, a pupil of Mr. Butterfield's, was the successful competitor.

Timber Trade Review.

PRICES, April 25.—Per S. Petersburg standard:—Quebec yellow pine, 12ft. 3 × 11in., second floated, £12 15s.; second dry floated, £13; third floated, £9; third dry floated, £9 10s.; Pinsacoala pitch pine, £12 10s.; Wasa white, £9; Wifsta Warf mixed yellow, £9; ditto third yellow, £8; Wyburg second yellow, £8 15s.; Sannesund second yellow, £7 12s. 6d.; Skelleftia third yellow, £7 15s. to £8; ditto mixed white, £7 5s. to £7 10s.; ditto third white, £7 5s.; Sundswall mixed yellow, £8 5s. to £10 5s.; ditto third yellow, £7 5s. to £8 10s.; ditto fourth yellow, £7; ditto mixed white, £8; Skutskar mixed yellow, £9 10s.; ditto third yellow, £8; ditto fourth yellow, £7 to £7 5s.; Stockholm mixed yellow, £7 10s.; ditto third yellow, £6 15s.; Soderham mixed yellow, £8 10s.; ditto mixed white, £6 10s.; Sikea mixed yellow, £9; Petersburg first white, £8 10s. to £9 10s.; ditto first yellow, £10 to £12 15s.; Onega first yellow, £14; ditto second yellow, £9 15s.; ditto third yellow, £10; Ljuone mixed yellow, £9 15s. to £10; ditto third yellow, £8 10s. to £9 10s.; Laurvig second yellow, £7 to £8 5s.; ditto first white, £8 10s.; ditto second white, £7 15s. to £8; Munksund mixed yellow, £9; Memel yellow, £9 10s.; Nyham yellow, £8 15s. to £9; Grimstadt first yellow, £7 5s. to £8 10s.; ditto second yellow, £6 15s.; ditto first white, £6 5s. to £8 5s.; ditto second white, £6 to £7 10s.

Per 120:—12ft. 3 × 9in. Wiramichi spruce, £12 5s. to £13 5s.; Saguenay first spruce, £15 10s. to £16; Matane first spruce, £15.

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Trade News.

WAGES MOVEMENT.

THE JOINERS' STRIKE IN NEWCASTLE.—The strike of the house joiners in Newcastle continues without any prospect of immediate settlement. The masters have held meetings and complain of the terrorism and intimidation exercised by the turn-outs. On Thursday week disturbances in the streets were renewed, and four or five of the ringleaders were taken into custody.

TENDERS.

BRIGHTON.—For a supply of paving-bricks, for the Town Council Works' Committee:—

	Per Thousand.
R. & N. Norman (65000)	£3 7 6
J. & R. Norman (50000)	3 7 6
Gravett (accptd.) (90000)	3 7 6
Tulley (45000)	3 7 0
Bristow & Son ... (40000)	3 3 0

BROMLEY.—For water-closets, baths, lavatory fittings, and other plumber's work, at the Poplar and Stepuey (Poor Law) Sick Asylum, Bromley, Middlesex. Arthur & C. Harston, architects, 31, East India-road:—

Finch	£1500
Jeakes & Co.	1485
Mann (accepted)	1445

Architects' estimate, £1500.

DORKING.—For alterations at residence, Harrow Lands, for Mr. Dixon:—

Lynn & Dudley (accepted)	£1500

FENTON.—For the erection of house, offices, and stables for the Right Hon. the Earl of Durham, at Fenton Northumberland. Mr. Thos. Farrer, architect; Mr. H. Leighton, surveyor. Quantities supplied by Mr. H. J. Harris:—

Kyle	£18,727 0 0
Reed	18,560 0 0
Brass	18,384 0 0
Elliott	16,150 0 0
Hall & Sons	15,470 0 0
Scott	15,243 12 8
Gyadon	14,830 0 0
Sanderson	14,530 0 0
Hudspeth	14,282 9 6
Jackson & Shaw	14,174 0 0
Smith & Brown	13,993 0 0
Robson & Son	13,629 0 0

HARROW-ON-THE-HILL.—For converting the White Hart, High-street, into a shop, for Mr. William Winkley, Messrs. E. Habershon & Brock, architects. Both tenders exclusive of bricks, which will be supplied by the owner:—

Woodbridge	£147 15 0
Kindell (accepted)	115 0 0

HORNSEY.—For road and fence-walls, Aged Pilgrims' Asylum, Hornsey-rise. F. Boreham, architect:—

Hill & Sons	£588

HORSHAM.—For rebuilding the tower and spire of S. Mark's Church, Horsham:—

Shearburn (accepted)	£3079

LONDON.—For alterations to the Horse-Shoe Brewery Tap House, for Mr. Chas. Best. Messrs. Mayhew & Calder, architects:—

Thomas & Son	£550
Eaton & Chapman	465

STROOD.—For infant school at Strood. Mr. George Ruck, architect. Quantities supplied:—

Flint & Dover	£990
Booker	946
Wallis & Clements	930
Gates	897
J. West, jun.	865
Sollitt	814
Clements (accepted)	790

WESTMINSTER.—For alterations to Messrs. Vickers' distillery, Victoria-street. Messrs. Mayhew & Calder, architects:—

Curtis	£338
Eaton & Chapman	330
King & Son	327
Turner & Son	325

WOKING.—For the erection of cottage residence for Mr J. Salter, at the Hermitage brickfields, Woking:—

Slade	£540 0 0
Millard	482 5 0
Faggoter	451 18 0
Whitburn	450 0 0
Harris	414 0 0
Martin & Wells (accepted)	350 0 0

CONTRACTS OPEN FOR BUILDING ESTIMATES.

LEWISHAM DISTRICT BOARD OF WORKS, May 10.—For the construction of a 15-in. pipe sewer, in the Dacres-road, Forest-hill, about 865ft. in length. Samuel Edwards, Clerk to the Board, Grove-place, Lewisham.

LEWISHAM DISTRICT BOARD OF WORKS, May 10. For the kerbing, channelling, metalling, and forming the Court Hill and Ryecroft-roads, Lewisham; the Queen Adelaide-road, Penge; and a road near South Penge-park. Samuel Edwards, Clerk to the Board, Grove-place, Lewisham.

GOOLE, May 9.—North-street Wesleyan Chapel.—For painting, graining, and gilding the interior of the above-named Chapel. Rev. C. W. L. Christien, Old Goole.

ARMLEY, May 5.—For the erection of a shed and other buildings, in Tong-road. Brown and Rhodes Brothers, Tong-road Mills, Armley.

ADMIRALTY, WHITEHALL, S.W., May 9.—For 1,880 loads of Dantzic fir timber, 3,500 stage deals, 100 loads of Dantzic oak thick stuff, and 300 loads of oak plank. Francis W. Rowsell, Superintendent of Contracts.

ILFRACOMBE HARBOUR AND PIER IMPROVEMENTS, May 7.—For the construction of a pier, breakwater, landing-stage, and other works. Surr and Gribhle, 12, Abchurch-lane, London, E.C., solicitors.

WILNECOTE (near Tamworth), May 6.—For the erection of the new schools. George Skey and Co., Wilnecote Works, close to the Wilnecote Station, Midland line.

LEEDS, May 5.—For the reconstruction of Swan-with-Two-Necks Inn, Hunslet, Leeds. Thomas Marshall, Architect, 20, Queen-street, Leeds.

LONG MELFORD, May 10.—For rebuilding Liston Hall, near Long Melford, in the county of Suffolk. Colonel Palmer, 19, Victoria-square, London, S.W.

CLECKHEATON LOCAL BOARD, May 1.—For the erection of five double sets of 5-brick Gas Retorts. David Hirst, Clerk to the said Local Board.

WALTON IMPROVEMENT COMMISSION, ESSEX, May 1.—For the sea-wall and defences opposite the Glebe, at Walton-ou-the-Naze, Essex. Frederick B. Philbrick, Clerk to the Commissioners, Colchester.

BRADFORD, May 4.—For the sewering, levelling, paving, flagging, channelling, and otherwise completing Queen-street, Brook-street, and Thorn-street. Robert Wilson, Clerk, Bradford.

MIRFIELD PARISH CHURCH, May 1.—For the warming of the new parish church. R. Lee Rayner, solicitor, Mirfield, honorary secretary to the Building Committee.

REIGATE WESTERN SEWER, May 1.—For the construction of a main sewer from near the Park Pond, at Reigate, under the Park-hill, to the irrigation works at Earlswood. Clair J. Grece, Town Clerk and Clerk to the said Local Board.

MAIDENHEAD, May 1.—For the erection of new schools. Christr. G. Wray, F.R.I.B.A., architect, 46, Cannon-street, Loudon.

IRELAND, May 1.—For erecting and completing a new barrack for the Royal Irish Constabulary, at Chirciveen, county Kerry. Mr. Arthur T. Williams, 9, Newnham-place, Cork.

IRELAND, May 1.—For erecting and completing a new barrack for the Royal Irish Constabulary, at Bruff, county Limerick. Mr. Martin Morris, No. 3, Richmond-terrace, Limerick.

PITCAPLE, May 4.—For the mason, carpenter, and slater work of completing the steading of offices at Loanends, Durno, by Pitcaple. Alex. Geddes, Logie Elphinstone.

GORSELEY, May 6.—For the erection of a school and teacher's house, at Gorseley, near Newent, Gloucestershire. Middleton and Goodman, architects, 1, Bedford-buildings, Chelteuham.

COLEFORD (Gloucester), May 6.—For the erection of a church. Middleton and Goodman, architects, 1, Bedford-buildings, Cheltenham.

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OF BEST QUALITY.

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Do.	do.	13 by 7	2 5 0	14s.
Do.	do.	12 by 7	1 18 6	13s.
Do.	do.	12 by 6	1 7 6	11s.

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METALS.

LEAD.

Pig—Foreign	per ton	£17 17 6	£18 0 0
„ English W.B.	do	19 15 0	20 0 0
„ Lead Co.	do	19 0 0	0 0 0
„ Other brands	do	18 5 0	18 10 0
Sheet Milled	do	18 15 0	19 0 0
Shot, Patent	do	20 10 0	21 0 0
Red or minium	do	19 15 0	20 10 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry.	do	27 0 0	0 0 0
„ ground in oil	do	0 0 0	0 0 0

COPPER.

British—Cake & Ingot	per ton	71 10 0	72 0 0
Best Selected	do	73 0 0	74 0 0
Sheet	do	74 0 0	77 0 0
Bottoms	do	79 0 0	0 0 0
Australian	do	72 0 0	75 10 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars, cash	do	65 0 0	66 0 0
„ Refined ingot	do	70 10 0	72 10 0
Yellow Metal	per lb.	0 0 6½	0 0 7¾

IRON.

Pig in Scotland, cash	per ton	2 15 6	0 0 0
Welsh Bar, in Loudon	do	7 0 0	7 10 0
„ Wales	do	6 7 6	6 12 6
Staffordshire	do	7 15 0	8 5 0
Rail, in Wales	do	6 15 0	7 0 0
Sheets, single in London	do	9 5 0	10 5 0
Hoops, first quality	do	8 15 0	9 5 0
Nail Rod	do	7 10 0	7 15 0
Swedish	do	9 15 0	10 0 0

TIMBER.

Teak	load	12 5 0	12 10 0
Quebec, red pine	„	3 15 0	4 15 0
„ yellow pine	„	4 5 0	5 0 0
St. John N.B. yellow	„	0 0 0	0 0 0
Quebec oak, white	„	6 0 0	6 5 0
„ birch	„	3 5 0	4 10 0
„ elm	„	4 0 0	4 10 0
Dantzic oak	„	5 5 0	6 10 0
„ fir	„	2 10 0	4 10 0
Memel fir	„	2 10 0	3 10 0
Riga	„	3 5 0	3 10 0
Swedish	„	2 5 0	2 10 0
Masts, Quebee red pine	„	4 0 0	6 10 0
„ yellow pine	„	4 0 0	6 10 0
Lathwood, Dantzic, fm.	„	3 0 0	5 0 0
„ St. Petersburg	„	5 5 0	5 15 0
Deals, per C., 12ft. by 3 by 9in.,			
Quebec, white spruce	„	12 10 0	18 0 0
St. John, white spruce	„	12 10 0	14 10 0
Yellow pine, pr reduced C			
Canada, 1st quality	„	18 0 0	19 10 0
„ 2nd do	„	13 5 0	14 0 0
Archangel, yellow	„	12 5 0	14 10 0
St. Petersburg, yellow	„	13 0 0	13 10 0
Finland	„	7 0 0	8 0 0
Memel	„	0 0 0	0 0 0
Gothenburg, yellow	„	8 10 0	10 10 0
„ white	„	8 10 0	9 10 0
Gefle, yellow	„	10 10 0	12 10 0
Soderham	„	8 10 0	12 0 0
Christiania, per C., 12ft. by 3 by 9in., yellow	„	10 0 0	12 10 0
Flooring boards, pr square of 1in., first yellow	„	0 7 6	0 10 6
First white	„	0 7 0	0 9 6
Second qualities	„	0 6 0	0 7 0

OILS, &c.

Seal, pale	per tun	37 10 0	0 0 0
Sperm body	„	83 0 0	0 0 0
Cod	„	35 0 0	35 10 0
Whale, South Sea, pale	„	34 0 0	34 10 0
Olive, Gallipoli	„	49 0 0	0 0 0
Cocoanut, Cochin, tun	„	48 10 0	49 0 0
Palm, fine	„	37 10 0	0 0 0
Linseed	„	31 5 0	31 10 0
Rapeseed, Eug. pale	„	44 10 0	0 0 0
Cottonseed	„	27 0 0	32 0 0

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BANKRUPTS.

TO SURRENDER IN THE COUNTRY.

Drayton, John Wesley, Yeovil, plumber, May 3, at Yeovil.—Booth, James, George, and Joseph, Charlesworth, ironfounders. May 11.—Lloyd, John, Poutyclerk, Llandebie, brickmaker, May 17, at Carmarthen.

PUBLIC EXAMINATIONS.

May 31, J. A. Abbott, S. Paul's-road, Highbury, contractor.—May 22, J. Garner, Liverpool, painter.—May 23, W. Davies, Birmiugham late builder and brickmaker.—May 25, W. Chappell, Upper Beeding, Sussex, builder.

DIVIDEND MEETINGS.

May 23, H. Terrel, late of Ashford, Middlesex, carpenter.—May 19, J. Onslow, Darby End, near Dudley, lime burner.—May 9, R. Danby, Burwell, Cambridgeshire, plumber.

DECLARATIONS OF DIVIDENDS.

R. Askew, Great Ponton, Lincolnshire, builder, div. 2s.—J. S. Barnsdall, Nottiugham, painter, div. 5d.

PARTNERSHIPS DISSOLVED.

Mackney & Woolnough, Sandwich, Keut, Engineers.—Paulin & Sons, Newcastle-upon-Tyne, engineers.—Smith, Tillotson, & Smith, Ilkley, stone masons.—Guest, Bros., Kingswiuford, glass decorators.—S. & A. Thomas, Birmingham, locksmith.—The Church Union Foundry Company, Lancashire.

THE BUILDING NEWS.

LONDON, FRIDAY, MAY 5, 1871.

THE STARTING-POINT FOR A MODERN STYLE.

HOW to bring modern architecture a little nearer to the level of modern wants and circumstances is, of all art questions, the most pressing. In fact, it includes them all. Give us an architecture as fit for our purposes as that of the Middle Ages was for theirs, and all minor problems will soon be solved. But the demand is an immense one. How much it implies few of those who talk about developing a modern style ever seem to realise. A modern style is not to be invented by one man; it will not start into being in a day or a year. We are not of those who believe, either, that the best chance of obtaining it is to reject the past and begin on the "all original" system. There must be a nucleus around which new ideas can crystallise; there must be a solid foundation on which new additions can be built up. There must be, in short, some style or period of a style assumed as a basis, something in which we can alter what needs alteration, and retain what is worth keeping. The question is, what style affords the most hopeful starting-point?

In trying to arrive at a conclusion on this subject, there is at least one circumstance in our favour. We are not left to judge of it merely by logic and *à priori* speculation. There is a far better guide before us—the teaching of experience. With no more trouble than that of walking about the streets of any large town, there are put at our disposal the results of innumerable experiments bearing on this very question. Within the last fifty years it would be hard to say what style has not been tried. Styles and shades of styles without number are being tried at this moment, till it is almost a puzzle to find two architects who employ the same one. Nothing, it is true, shows more fully the unsettled state of modern practice than this. Nothing so clearly measures out to us the distance we have to travel before we attain an architectural system of our own as the fact that few of us can even agree as to which, of all existing systems, comes the nearest to it. One after another we have tried them all,—Greek, Roman, Italian, and Renaissance; English-Gothic, French-Gothic, Italian-Gothic; Gothic of all periods—Early, Middle, and Late; Romanesque, too, and Byzantine; not to speak of Moorish and Arabian. We have tried them separately, and we have tried them mixed, and after half a century so employed, it is surely not too soon to examine the result. Which has proved most successful in the past; which offers most promise for the future? To attain some general agreement on this question would be an immense step in advance. To pull all together, instead of all pulling in different directions, would soon revolutionise the state of affairs. Even if we could clearly decide what to reject out of all these styles, something would be effected. It would be no slight gain to prevent the extravagant waste of force that is now going on, to settle positively what roads could lead nowhere, and to save every one from wasting his time and trouble on them in future.

To state the objections to many of these styles as a starting-point may seem to most of our readers a needless task. They have practically decided for themselves that Gothic, in one or another of its phases, is alone deserving their attention. But even for those who have most resolutely fixed on their future course, it is not useless to recall the reasons why they have fixed on it. The adoption of Mediævalism because it is the fashion, and its adoption because it comes nearest to what we really want, are two very different things. At the present moment, we have far too much of the former and far too little of the latter, The bulk of modern work could not be so lifeless and unreal as it is if those who produce it had to account for and defend its characteristics. Its authors are aimlessly drifting with the tide—and should it turn, would drift just as aimlessly in a contrary direction. There is more hope of any class of men than of these. Future art will owe more to those who take up the very worst and absurdest of styles from genuine conviction, than to those who take up the best merely because the popular fancy of the hour may applaud it. The genuine Gothic architect of the day may look with respect on such works as those of Mr. Cockerell or Messrs. Thomson, of Glasgow; he may feel that the designer of the courts at South Kensington was a man and a brother; but what can he think of those who produce the regulation church or schoolhouse of the period? And the public speak of them, too, as Gothic architects; suppose them to be his special friends and colleagues! Of all the dead-alive architecture of the day, he must surely hate dead-alive Gothic the most. That writer might do no slight service who would set in the strongest lights the faults as well as the merits of modern Mediævalism; who, if such a thing were possible, would drive all its followers into following it with intelligence and discrimination; who would force them to decide how far to follow it—what part to keep and what to reject. Such a writer might take a candid survey of other styles, and tell the truth about them. He might insist on the good in them—for there is good in them all: a kind of good, possibly, beyond our reach, or not worth paying the necessary price for—and if so, this truth should also be made clear and unmistakeable. But it is truth, and not half-truth, that we want; we need not pretend that there is nothing admirable in any style but one, for fear we should desert that one which we have chosen. Those who have taken a course with their eyes open, and made up their minds with full knowledge of the facts, are not so easily to be turned aside. They can bear to recognise the merits of other systems besides their own; for they are either striving to introduce these same merits into their own system, or they see with perfect clearness that it is impossible so to introduce them without destroying greater ones.

A thorough examination, then, of the faults and advantages of the various architectural fashions now in vogue amongst us might lead to useful results. It is too great a subject to be even outlined here, and to many of our readers all its interest would probably be connected with one only of its divisions. They have decided that Gothic is preferable to anything else as a starting-point; but what especial phase of Gothic is best for the purpose is perhaps not equally clear to them. "Early Gothic," we shall probably be told, is the type selected; but Early Gothic may mean two very different things. It may mean, and most frequently, perhaps, does mean, in this connection, a half-developed tracery system; it may also mean a system in which there is neither tracery nor any necessary tendency towards it. Which of these two is the best foundation for modern work—the incomplete Geometrical, or the perfected Lancet style? The question is no easy one to answer, and the beauty of early tracery windows has commonly decided it in favour of the type which admits them. We are not sure as to the wisdom of this decision. Tracery once allowed, it is not easy to stop its development. Some of our leading architects, having started years ago with its best and earliest forms, have been, and are still, going through a "decline and fall" of Gothic in their own practice. Their plate tracery has grown up into bar tracery—and this into more and more complex forms; the rest of their details have kept it company, and their work has passed on from Early to Middle Gothic, or Later. The breadth and freshness and simplicity which once characterised their work are gone. The hopefulness has vanished from it; the germs of a nineteenth century building style are no longer to be sought there; its authors have given up thinking for themselves, and have swallowed the Mediæval system whole. They "make it" A.D. 1371, and ignore the trifling fact that their clock is five hundred years too slow. It is the natural result of having accepted the principles by which Middle Age art grew old and died. It would surely be safer to adopt those only by which it first attained perfection; the perfection of the pure Lancet period, which, had it never been exchanged for a puerile and frittered tracery style, might have held its ground against the strongest efforts of the Renaissance. The introduction of tracery was more, perhaps, than anything else, the destruction of Gothic. A pointed style, free from all, even the very slightest, germs of tracery, does not, like an opposite one, plainly contain the seeds of its own ruin. It will, we think, harmonise with a higher class of painting and sculpture, and will not demand an exaggerated quaintness in their productions in order to assimilate them to itself. It is strong, beautiful, and severe—natural and reasonable; fit for an age whose best characteristic is earnest study of facts rather than wild fantastic redundance of imagination.

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THE ARCHITECTURAL DRAWINGS AT THE ROYAL ACADEMY.

HAVING in our preliminary notice of the architectural drawings at the Royal Academy exhibition in the last number of our journal given a general sketch of them, we propose now to consider them more in detail. We shall not, however, have occasion again generally to refer to any other drawings than those which represent designs for proposed or executed buildings, as we have sufficiently noted the principal works of those artists who select architectural subjects for their pictures and water-colour drawings. The first in order of the designs according to the catalogue is—875, New English Church about to be erected at Patras, Greece, from the designs of G. Vialls. The view shown is that of the interior, which is of a simple and appropriate type for the purpose. 877, Stained-glass Window, St. Mary's, Reepham, Norfolk, by A. O'Connor, is of the ordinary mistaken character adopted by glass manufacturers rather than artists—a transparency, it might be called, representing the Crucifixion, treated as one composition, spread over a three-light window, ignoring the mullions. The drawing of the figures is very defective, irrespective of the mistake of their being in perspective, and the masses of bright colour are at the sides of the picture, which lacks, in consequence, any concentration of general effect. 878, Estate Offices, Loch Rynn, Dromod, Ireland, for the Earl of Leitrim, by Sir M. D. Wyatt, is a weak drawing of a modest cottage, fairly well treated, with the exception of the porch, which is miserably treated. Sir M. D. Wyatt has also sent his original study for the new ceiling of the hall of Clare College, Cambridge, a mere geometrical arrangement of pseudo-beam construction, all the members of which are vastly too heavy, while the careless scratches which stand for ornaments to fill in the panels and spandrels only represent the worst description of rococo that could be bought at any plaster-shop. Surely no college at Cambridge can seriously intend to perpetuate such work in actual execution, with the memory of what Mr. Burges has done for Worcester College in view. No. 879 is a Villa at Eastbourne, by J. P. Jones. This is very indifferent in detail. That at Whitley, Surrey, by R. Nevile (886), is far better. though the chimneys have exaggerated height in proportion to the building. No. 881, Sketch for a Cottage Hospital, intended to be erected as a memorial to the late Marquis of

Westminster, by F. A. Butler, is a picturesque and pleasing block of building. 885, Alterations to Bloomfield Hall, Sunningdale, Berks, by R. W. Edis, is a pleasing drawing of an unassuming and appropriate gentleman's country house. Mr. Edis's more important work, No. 981, "View of proposed restoration of, and additions to, the old Bishop's Palace, at Buckden, in the county of Huntingdon," has the same characteristics, and the additions are picturesque and in harmony with the old work. The tomb at Kensal-green by the same architect is somewhat commonplace, but yet quite unobjectionable. Mr. Brooks has been somewhat unfortunate in having all his pen-and-ink drawings of his churches in the East-end of London hung too high. No. 887, S. Columba, Kingsland-road, No. 933, S. Chad, Haggerstone, and No. 939, S. Andrew, Plaistow, are all bold and effective works, but lacking refinement; the plate tracery in the windows, for instance, is too large and bald. Mr. Seddon exhibits in No. 880 a portion of his Victoria-terrace, at Aberystwith, an effective drawing of an ordinary class of domestic architecture, enriched mainly by the colour of the materials; the general character is Mediæval, with columns as mullions to the windows. 889, Interior of Memorial Chapel at Malaga, by J. James, is not equal in its treatment to its pretensions, and will not bear comparison with the neighbouring drawing, No. 894, Interior of S. Augustine's, Kilburn, now in course of erection, by J. L. Pearson. This recalls the effect of Mr. Pearson's vaulted church at Lambeth. The plan seems peculiar, and to consist of a lofty nave and chancel, and aisles nearly as high; the latter divided by a gallery into two stories, after the Continental fashion. The whole is vaulted, and delicately enriched by a sparing use of coloured decoration. The vaulting appears strangely to cut across the windows of the east end, which are arranged as a double row of triplet lancets. The drawing is a good one, and the effect solemn and subdued. Mr. S. Clarke, Jun.'s drawing, No. 895, of the interior of All Saints' Church, about to be erected at West Bromwich, Staffordshire, also suffers by its close neighbourhood to Mr. Pearson's. The nave seems of great width, and its open roof heavy and ugly; and the composition of the reredos at the east end is not in accord with the window above. Far better is the design exhibited by the same architect, in conjunction with Mr. A. Hartshorne, for a mansion to be erected near Warsaw, in Poland, No. 951. This is really a good drawing of a fine work. The plan shows the main building to be a quadrangular block, enclosing a covered court in the centre. The entrance façade is a fine composition, flanked by towers and projecting wings of subsidiary buildings. The detail is Elizabethan, simply treated, without the ordinary extravagances, and with more solidity than usually appertains to that style. 896, a new Drinking Fountain, Smithfield, by F. Butler, is a clumsy structure, which, though pretentious, will be no improvement upon the ordinary low modern type of such works, which is much to be regretted, considering its important position in the metropolis. 893, Design for a National Mausoleum, by H. Lonsdale, is a creditable prize student's drawing, and as such has merits; but the combination of the dome with the Gothic cathedral-like substructure is not successful. 892, Royston Hall, Kent, Messrs. Habershon and Pite, is a large but hardly pleasant drawing of a mansion, which is not without some of the feeling of old work in the gabled end and chimneys, but is indifferent in general grouping, and in the detail of the principal front, and particularly in the huge and useless battlements to the porch. 908, House at Baveno, Lago Maggiore, now building, by W. A. Boulnois, is a large structure, with raised central and wing blocks, with high pavilion roofs with unpleasant outline. Its best feature is the colonnade which surrounds the whole building. 913 is Mr. H. L. Florence's prize design for a theatre in the modern French style, which, though highly creditable for the purpose for which it was designed, hardly bears its present prominent position among the drawings of actual works. The flank buildings do not well support the more imposing block which forms the main façade. Mr. Florence also sends three sketches of but moderate excellence. No. 931 is the best of these, and the archway is delicately treated. 915, Mr. Norton's church, to be erected at Newport, Monmouthshire, has a passable nave and aisles, on to which a sort of transept is unhappily grafted, and a very poor, though pretentious, tower and spire are equally misplaced over the west bay of the chancel. Mr. Norton sends also two drawings for mansions, 967, North-west view of St. Audrie's, Somerset, the seat of Sir Acland Hood, and 968, Elveden Hall, Suffolk, the seat of the Maharajah Dhuleep Singh, the former Gothic, and the latter Italian, almost equally vapid and ill-proportioned, as well as indifferent in point of detail. The south-west view of the former (No. 950) is somewhat better than the opposite or entrance side of the house. 912, Town Hall, Law Court, and Public Offices, Todmorden, by J. Gibson, is a Classic structure, of a character now seldom affected, and one which we should be certainly sorry to see revived generally. It is a rectangular building with apsidal termination, with an order of attached half columns against the former, and detached columns carried round the latter, bearing an entablature, the frieze of which is enriched with a guilloche pattern, interrupted over each column by a gigantic rosette. The spaces between the columns have two ranges of openings, the upper circular and the lower rectangular, with panels of sculpture between round the apse only. The effect of this portion is simple and stately, but much spoiled by being raised upon a high basement story required for subordinate rooms and offices, affording one more instance to prove that Classic architecture cannot adapt itself to modern requirements. Mr. B. J. Talbert has an elaborate drawing, 917, showing the interior of a hall, in order to show suitable furniture and fittings of his character of design. 918, the tower and spire now being erected at St. Mary's, Rugby, by Messrs. Whelan and Heyes, is pretentious, but unsatisfactory; the tower is starved and thin, and the lucarnes badly set upon the spire. 923, Red Leaf, Penshurst, Kent, now being rebuilt from the design of R. P. Brown, is a bad example of the worst description of Cockney Gothic, and we regret deeply to learn that it has replaced an interesting old Georgian house, which has been ruthlessly pulled down to make room for it. 932, Lythe Hill, Haslemere, Surrey, erected from the designs of F. P. Cockerell, is a many-gabled red brick house, tolerably satisfactory in general effect, but the hybrid character of the detail is to be regretted. Mr. Cockerell also sends 959, Down Hall, Harlow, Essex, the seat of Sir H. Selwin-Ibbetson, M.P., built of concrete with stone dressings and plain surfaces, decorated with "sgraffits." We are pleased with these artistic designs in a novel material, but the building itself we cannot commend. The treatment of the wing blocks is especially unsatisfactory. 927 is a very elaborate design by Mr. Seddon for the furniture and decoration of Brecon College Chapel. The Crucifixion is the subject represented on the east window, upon a large scale, with coloured figures upon a grisaille ground. The coved ceiling has a range of patriarchs from the Old Testament, and figures of angels above upon grounds alternately blue and green; the effect of this alternation is hardly satisfactory to our mind, and we think that it would be preferable if all the panels were blue with green borders. There is a large space of walling on the side and east wall filled with compositions from sacred subjects, treated in and early an conventional manner. The whole effect is rich and decorative. The figures, we learn, are by Mr. Rossiter. Mr. Seddon also has a richly decorated interior of Grosmont Church, Monmouthshire, No. 964. 937. North-east view of Preen Manor, Shropshire, now erecting from the designs of R. N. Shaw, is, in our opinion, the gem of the whole collection. It is an exquisite drawing in pen and ink of a picturesque structure, the lower part in mullioned stone architecture, and the upper in Old English timber construction. Perhaps the way in which one of the gables cuts into the adjoining roof might be objected to; but the whole effect, to which Mr. Shaw's elongated chimney-stacks add much, is most charming. 936, Garbridge House, Westmoreland, now being erected from the designs of O. Hansard, suffers by being close above Mr. Shaw's drawing, but is simple and unobjectionable in character. 940 is a beautifully-executed drawing of a design for the New London Corn Exchange, submitted by G. G. Scott, junr. We look in vain for any trace of Mediæval training in this design, which looks as if it had been composed by South Kensington students, in the meretricious style of their "Keramic" refreshment-room. We regret greatly upon this account the appearance of this otherwise clever drawing upon the walls of the Academy. 939 is an exterior view, and 947 an interior view of a highly original design for the same building, by Messrs. R. Hesketh and T. H. Watson. As drawings these are perfect, but as designs, though full of ability and clever adaptation to the material (iron) adopted for the roof, bizarre and peculiar. We really cannot regret the non-execution of this curious horse-shoe shaped covering, with the columns below placed on the rake, to take the thrust of the principals. 943, Eaton Hall, Cheshire, by A. Waterhouse, is, we regret to say, a lamentably costly expenditure in pseudo-Gothic; and we are prevented from seeing whether the detail of his town-hall at Manchester is any better by the strangely-foreshortened perspective of the drawing of it, No. 948. Mr. Street has sent one of his characteristic pen-and-ink sketchy drawings of his design for the proposed restoration of and additions to Christ Church Cathedral, Dublin. They undoubtedly form a picturesque and stately pile of buildings. 946, St. Luke's, Deptford, by T. H. Watson, seems, from this "first sketch" for it, to be a pleasing and picturesque church. The tower is over the western bay of the chancel, with a semi-circular apse to the east. 952, New Library and Museum, Guildhall, by H. Jones, is a grand opportunity lost, the Gothic detail being far below par. The drawing is also an indifferent one. The same may be said of Mr. Brandon's Marlborough Club-house, Pall Mall (955). Indeed, we hardly understand how an educated architect could associate its round-arched doorways with misplaced key-stones and the coarsely-moulded semi-Gothic bay window above in juxtaposition. Mr. J. O. Scott seems to betray equal ignorance of or carelessness for proper Mediæval detail in his ugly roof over Speldhurst Church, near Tunbridge Wells, which he is rebuilding. He sends an outlined drawing of it, for which the Academy have shown apparently the same consideration as we should have done by hanging it as high as they could. We only wish they had treated in a like manner No. 960, design for Town Hall, Winchester, by Messrs. Salmon and Jones. 958 is the exterior, and 920 and 902, interior views of Mr. Spiers's design for the "Criterion," which we lately reviewed in our notice of the competition designs for that proposed structure. 962 is an exquisite drawing of an excellent design for the interior of a church now being erected near Bristol, by Messrs. Ponton and Gough, Bristol. It is treated like a basilica, with semi-circular apse and baldachino over altar; semi-circular transverse arches mark off as a chancel the two bays westward of the apse.

The roofs are trefoil shaped, and delicately enriched with colour. The whole effect is quiet and good, but resembles somewhat that of Mr. Blomfield's Church at Oxford. With the pleasing reminiscence of this drawing, we take leave of this small collection of architectural drawings, some of which grace, and some, alas! disgrace, the walls of the Academy. It cannot but be allowed that the hangers have been more than generous to architects upon this occasion, and that it is by no means chargeable to them that the number of works hung is as small as it is. We should ourselves have rejected a considerable number even of those drawings which have obtained prominent places upon the line of sight. At the same time there are a few drawings and designs of very high excellence, and which may be studied by professional men with very great advantage.

DIVISIONS AND BOUNDARIES OF LAND.

THERE is not a surveyor or engineer of experience who has not been engaged in cases involving the question of the correct boundaries of certain portions of land. The irregular and imperfect manner in which the limits of property as well as of large districts are defined is a constant source of litigation, and is, besides, the cause of much hostility and bad feeling arising among contiguous landowners and tenants. A forcible instance of the trouble and annoyance that is occasioned by our ambiguous boundary lines was mentioned in the last report of the Sanitary Commission. A certain parish was not maintained in the condition it ought to be with regard to sanitary provisions, and a summary order was sent by the Secretary of State to the local authorities to execute the works necessary to ensure the health of the community. The authorities replied that the site of the proposed works was not in their own, but in the adjacent parish, a statement which, there is scarcely need to remark, was vehemently contradicted by the party thus implicated. Before any steps could be taken to carry out the works which were so urgently required, it was obviously indispensable to settle the contested point, which was not effected without some delay and accompanying expense. Almost numberless instances could be adduced to demonstrate that the existing methods of defining the limits of different areas of land, whether they be of a large or small extent, is radically defective, and that the abandonment of the old system, and the adoption of a new, would, if judiciously put into execution, be attended with the greatest advantage to not only the owners of the soil, but to the nation at large. There is no doubt that the subject embraces a wide range, but that only renders it of the more importance. It is possible that some of our readers may not quite agree with the plan we are about to propose, but although we are averse to change for merely the sake of change, yet at the same time we are no advocates for the retention of a régime or the maintenance of a system which has nothing but antiquity to recommend it. No one is better aware than ourselves that every alteration is not necessarily an improvement, nor is every innovation a reform.

Let anyone take a map of England and Wales drawn to a large scale, and study the divisions of the separate counties. He will find that not only are the respective sizes excessively disproportionate in extent, and the boundaries tortuous in the extreme, but that they are not even distinctly individualised. Smaller parts of one county are, as it were, divided altogether from the main portion, and pitchforked headlong into the centre of their neighbours. The same description of severance can be observed in maps of the sister countries. Assuming counties as the chief division of the country, there are, in addition, ridings, hundreds, duchies, parishes, dioceses, unions, boroughs, districts, and many other divisions depending upon local customs which are not known outside their own territory. It is but fair to suppose that at some time or another the necessity for these various distinctions did exist. It is equally fair to ask if it exists any longer. To whatever purpose it may be applied, the whole principle of division rests upon the fundamental theory that the smaller portions, or subdivisions, should be exact sub-multiples of the larger. Even in our own imperfect and arbitrary standards of weights and measures this rule is practically recognised. It is rather curious that those measurements relating to land should be a partial exception to this rule, and the same holds good with respect to the proportion existing between the larger divisions already mentioned. There is not the slightest attempt at proportion between the relative areas of the principal and subdivision, nor is there any between those of the same character. The whole system, both as regards enumeration and superficial extent, is a complete chaos. It is impossible to imagine that all these divisions are wanted, or that some of them are not frequent causes of annoyance and confusion to the owners of property. We venture to assert that if the distinguishing characteristics of each were laid down on paper, the most experienced surveyor would be unable to name them all correctly. A thorough revision of those antiquated obsolete lines of demarcation should have been introduced at the time of the Trigonometrical Survey, and that reduction of number and general simplification effected which would so greatly conduce to the public benefit. That would have been the opportunity to seize for carrying out the improvements, but the plan is now as feasible as ever. The accuracy with which the geodetical operations of the survey have been conducted, and the precision with which the physical features of the ground have been delineated, in addition to the calculation of the acreage, would render the task comparatively light. In all probability, before anything would be attempted now, we should have at least two or three commissions appointed to inquire into the whole matter, and some five or six years after their respective reports had been compiled, a faint notice might be taken of their contents. At the present day, not a single step can be made towards any important measure until some years have been consumed in discovering that which was patent to every one at the beginning.

Assuming that the simplification of our present land divisions and boundaries would be of great advantage to the country, we may now proceed to the second part of our subject—namely, the nature of those boundaries. These may consist either of natural or artifical lines of demarcation. Both are to be met with on large estates; but the former are nearly universal in the case of counties, parishes, and those divisions of land which are determined by authority, instead of depending upon the claims of private parties. The natural physical features of the ground constitute what we have termed natural boundaries, such as rivers, lakes, mountains, and forests, and have from time immemorial served for this purpose. But it will not for a moment be denied that these are no longer competent to perform this duty, if they were so in former days. Mountains are levelled, forests are cut down and burned, and rivers are diverted, so that the entire face of a district is altered in a few years. Independently of artificial causes, the channels of rivers, which are the most general land boundaries, are continually shifting their course. The result in this instance is that either the boundary shifts with the river, or it takes a suit in Chancery to re-determine it. Whenever a squabble arises among local parties, involving perhaps no great amount of loss or gain to either, the question of boundary is often referred to the "oldest inhabitant," who, in all likelihood, was never well acquainted with its original position, much less with the altered one. In travelling through the country, the limits of this or that parish will be frequently pointed out by the observations, "That tree is in the parish of So-and-so," "That small clump of trees is in the other," "That little hillock is the boundary of another." When landmarks of a nature so perishable, and so easy of dispute, are permitted to occupy the important situations they do, it is no wonder that litigation is the only resource to those who are interested in the accurate determination of the boundary. It is true that the same remark might be made respecting the walls, palings, and fences which separate different properties, but that is a consideration for the proprietors and occupants. It is not the duty of the Government to define the limits of the property of private individuals, but it is its duty to define that of the national and public divisions of land. It is, moreover, its duty to define it in such a manner as will render all uncertainty and dispute impossible.

The plan that we consider the best adapted to fulfil the object in view is the abandonment of all natural boundaries, and the substitution of artificial ones. It has already been observed that the former date from the earliest times; so do the latter. In the days of the patriarchs, landed properties were marked out by stones or posts, placed to indicate the divisions of family estates. It was easy to remove these landmarks, and set them in a different place. and thus a dishonest person might enlarge his own estate at the expense of that of his neighbour. Hence it was a matter of considerable importance to prevent this crime among the Israelites, as with them it would be equivalent to forging, altering, destroying, or concealing the title-deeds of an estate among ourselves. Accordingly, by the Mosaic law, there was an especial curse attached to the person who committed such an act. Josephus, in his history, carries this point further, and contends that the use of these ancient landmarks was not confined solely to indicating the limits of individual properties, but that they were employed also for the same purpose with respect to the boundaries of neighbouring kingdoms and adjacent territories. In the days when petty chiefs were numerous, when the feudal lords were so powerful as to gain for themselves the title of king-makers, a dense forest, a steep mountain, or a deep river constituted a natural and suitable boundary between their respective lands. But with the progress of intercommunication and locomotion, there has arisen the want of a better and more accurately defined system of lines of demarcation than that which is afforded by those in existence. Omitting the consideration of the fact that individual claims are frequently dependent upon the accurate adjustment of public landmarks, the instance quoted at the commencement of our article demonstrates how seriously public interests may be affected. Again, the increase in the value of land is closely connected with the whole question. In former times, a deviation of a hundred feet one side or the other would not have been regarded as worth disputing, but now a tenth part of that distance would suffice to set the opposite landowners by the ears. In the brief sketch which we have laid down, it is not possible to allude to the details of the proposed revision of our land boundaries. But if the principal lines of demarcation were once determined, the arrangement of the secondary would involve but comparatively little trouble. The case is analagous to that of a large survey. When once the main lines have been laid out and checked, and the survey found to "close," the "filling-in," or the determination of the smaller and less important lines, is an easy task. Moreover, if they should be erronous, they are readily corrected by a reference to the more important ones. We have not space at present to describe the practical method by which the rectification and permanent unalterable adjustment of our present incorrect and uncertain natural landmarks might be accomplished, but shall discuss them on a future occasion.

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VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."*

VI.

IN tracing the rise, the growth, and the decline of the ecclesiastical architecture of France, we must necessarily traverse much of the same ground over which we have travelled in our former notices of M. le Duc's work. Then we considered the general principles which led to the development of French architecture. Now, we shall endeavour to confine our observations to those special applications of them to church building; and here, as heretofore, we shall the rather give the substance of M. le Duc's work than a literal translation of his words, deviating from our text when and where necessary, in order to render his illustrations more forcible to English readers. "Amongst all people religious architecture is the first to develope itself; it not only supplies the most powerful moral want, but it provides also an asylum, a place of refuge, and a protection against violence." A temple or a church was a sacred place; armed men dared not to enter it, and in it the weak found a superhuman strength for defence from the strong. It was in the temple or the church that the archives of the nation were preserved; under its shadow were held the great religious or civic assemblages which the necessity of the times demanded. At such times, the need was most felt for the sanction of a superhuman power to the people's deliberations, and this sentiment was especially felt in Christian times. The Pagan temple was but a sanctuary, wherein none, save the priests and the initiated, could enter; the people remained without those sacred walls, and thus these edifices, even where they yet remained intact, in Italy or in Gaul, suited not the Christians or their worship. The ancient basilica, with its large open spaces, its tribune, its aisles, and its portico, readily lent itself to the new faith and the new law. Indeed, it is even probable that the disposition of these Roman buildings had a certain amount of influence on the usages and rites of the early Christians from the moment when they issued from the catacombs, and dared openly to exercise their new form of worship. Into this subject we cannot now enter, but must confine ourselves to the history of ecclesiastical architecture from the period when the Christian basilica of the Carlovingian epoch became a settled form. Then one altar sufficed; bell towers were built to call together the faithful, and to advertise them of the hour of prayer. The tribune of the Pagan basilica was not large enough to hold the large concourse of clergy gathered together in the church, and the choir had to encroach upon the space left open to the public in the Roman edifice. The church was not isolated, but round it (as round the Pagan temple) were grouped the dwellings of the priests and clerics, the porticos, the sacristies, and sometimes even the schools. There, too, were the libraries, and the smaller rooms for the treasury, the chartulary, the safe custody of the sacred vessels and the costly sacerdotal ornaments, and round it were lodged the penitents and those whom the troubles of the times had driven there to find the only place of "sanctuary" which could protect them. Round all these extended an enclosing wall, guarded by fortified gates, which were closed at night, and within which lay God's acre for the dead and the gardens of the living. A large number of these churches were ministered unto by a regular clergy, dependent upon various abbeys and priories, and attached to these establishments. The collegiate and parochial churches, and even the smaller chapels, possessed, in a greater or less degree, all the requisites for the administration of their services, such as small cloisters, sacristies, and presbyteries. The cathedrals contained within their precincts the chapter-house and its dependencies, large cloisters, synodal halls, the bishop's palace, and the other requisite buildings.

Such, then, being the general requirements, let us see how they were met, and the general arrangement of an ordinary church of the tenth century will be best learned from a glimpse at the diagram given in our sheet of illustration. This is not a literal copy from any one existing building, but an architectural summary of the ordinary disposition of such a building (see Fig. 7). At I is the portico which preceded the nave, the "narthex" of the primitive basilica, under which rested those penitents to whom entrance into the church was temporarily forbidden, or those pilgrims who arrived before the church doors were opened. This porch was usually roofed over by a lean-to roof, and gave entrance to the church by means of three doors, closed at night, and shut in by curtains during the day. At N stood the baptismal font, generally in those days situated in the centre of the nave, but sometimes, as in after times, placed at the end of one of the aisles, H. The nave G had usually down it a wide clear passage-way, serving not only as a means of circulation, but also for the separation of the two sexes. At P was the tribune whence the epistle and gospel were read, and where, in later days, the jube or rood-loft was placed. At A was the choir where the clerics sat, and at O was usually the entrance to the crypt, in which lay the remains of that saint to whom the church was dedicated. On each side of this steps led up to the elevated chancel or sanctuary. The principal altar was at C, having behind it at B the seat of the bishop, abbot, or prior, and those of the canons or monks extended on the right and left to such a distance as the exigencies of the establishment demanded. The transepts were at E, and the secondary altars were placed in apsidal chapels behind them at D. At F was usually the sacristy, communicating with the cloister L, and thence into the other conventual buildings. Sometimes access to the cloister from the portico was obtained by means of a porch at K, and in those days the bell towers were usually raised over the last bays of the lateral aisles near to the transepts MM, not, as became afterwards the custom, in the front of the church. The "servants of the church" were thus placed in more immediate intercourse with the bell chamber, and were not obliged to traverse the crowd of the faithful to ring the sanctus bell during mass, nor had they far to go to give notice of the offices for the night. Down to the end of the last century the abbatical church of S. Germain aux Pres retained its bell towers thus placed. Cluny, Vezelay, many other churches, and a large number of the cathedrals, have yet, or had, their towers thus disposed, and our own country contains several examples of this arrangement, of which Exeter may be mentioned as a typical specimen.

"In the tenth century the apses and lower story of these towers were almost the only portions of the church which were vaulted, the nave, aisles, and transepts being covered with wooden roofs. By-and-by, as the science of construction become more developed, the choir and the eastern parts of the church, where the distances were short, and where the heavy towers supplied weight, became vaulted; but it was a long time before the architect became brave enough to vault the nave. One mode of doing this was generated by the architects of that church of S. Frout, at Perigueux, which, as we have before mentioned, had so great an influence upon the course of architecture in central France. In our sheet of illustrations we give a plan and transverse section of this (Figs. 8 and 9), remarking that not only is the disposition of the plan the same as that of the church of S. Mark, at Venice, but that the dimensions of the two churches are almost identical. The chief variation from the parent model is that the arches and the domicular vaulting here employed are formed of two segments of circles, giving a pointed and not a round arch, albeit that the pointed arch was not yet adopted in the rest of France. That it was here chosen on scientific principles, and as a means of throwing the thrust lower down the walls, there is but little doubt, and we find the principle thus generated becoming generally recognised elsewhere. The solution of the problem of vaulting the naves and larger spaces thus given was seized upon with avidity, and during the eleventh and twelfth centuries a great number of churches thus constructed sprung up in Aquitaine, amongst which we may name those of Souliac, Cahors, Angoulême, Tremolac, S. Airt-Senieur, Salignac, S. Emilion, S. Hilaire at Poitiers, Puy-en-Velay, and Fontrevault. Of this latter (which dates from the twelfth century) we give a plan and a section of one of the bays of the nave (Figs. 10 and 11). It will here be seen that the plan developes itself from the Greek cross form to that of the Latin cross adopted throughout the next. Four domicular vaults or cupolas, with pendentives, cover the nave, supported by side arches and strong buttresses projecting inwards—a system revived in the fourteenth century, and which became a strongly-marked feature in the ecclesiastical erections of the later Renaissance and the Classic revival. In such parallel lines does architecture march at different epochs and in different styles. From Auvergne as a centre, and following the Loire as far as Nevers, another system was in vogue. There, in the eleventh century, when they abandoned the system of wooden roofs, they adopted the barrel vault of semicircular section for the nave, resisting its thrust by means of quadrate arches above the side aisles—a system which continued to be practised during the twelfth century, and which spread itself down as far as Toulouse, where it is used in the fine church of S. Sernin. As a type of this system we give a plan and two sections of the interesting Church of Notre Dame du Port, at Clermont Ferrand, built in the later years of the eleventh, and the commencement of the twelfth century (Figs. 12, 13, and 14). The plan exhibits the retention of the basilicon form, and the section through the nave shows a well-marked triforium, but the necessity of resisting the thrust of the nave arch prevents the insertion of a clerestory or the admission of any direct light to the nave.

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* Dictionnaire raisonné de l'architecture Française du XI. au XVI. Siecle, par M. VIOLLET LE DUC, Architecte du Gouvernment, Inspecteur-général des Edifices Diocesains. 10 vols.; 8vo.; Morel, Paris, 1854—1868.

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LONDON POOR HOUSES, AND WHAT TO DO WITH THEM.

IT must always be a problem how best to build for the "poor" of a great city. In the attempt to provide for the rich and for those who can pay for what they want, we are never at much of a loss, for the wealthy man who seeks a new home, or has determined to build one for himself, can always order what he thinks he needs; but with the poor, who are entirely at the mercy of others, it is far different—they must take what they can get, whether good or bad. No one can go through any of the poor, dingy streets of London without wondering who built them, and for what class of people they were originally constructed; and if any one very curious indeed in these matters should happen to make periodical visits to very, very poor neighbourhoods, he will see how year by year the houses get blacker and blacker, and indeed, if truth must be told, more and more picturesque. There is no harm in this change of colour from bright new oil paint to the natural brown and rusty blacks which weather and time gives to a place; but there is unfortunately another change which goes on at the same time with it, and that is, the house becomes more and more rotten, floor-boards, walls, ceilings, stairs, roof, and even solid brickwork, feel the touch of time, and get more and more ricketty, and need week by week more of repair and looking to. Many are the streets in London to which we could point which would illustrate our position, and the thought often occurs to us: What a pity it is that some wealthy philanthropist does not go to work and do the comparative little that is needed to keep the poor house from falling about the poor tenants' ears! How little, indeed, sometimes needs to be done! People are sometimes turned out by the score from the dingy street when but a few pounds expended in time would save them and their houses. This sad neglect in not a few cases has driven whole families of people to find homes elsewhere, and in more thickly-crowded places; but by the simple plan of repairing and adding some character to the dingy and worn streets of London as they are—selecting, of course, if the matter be one of gift, the very worst that can be found—how much good might be done! It is not a little surprising to consider with how little of money, material, and labour you can verily "improve" and render habitable, and in some measure interesting, if not artistic, a common and ordinary London house. Let us, for example, take one of the plainest, flat as the street pavement, and as bald. If possible, take away so much of the front of it as shall make the roof visible, or partially visible; improve, if that be possible, the chimney pots, put wide balcony slabs and railings on the sills of the upper windows to hold flower-pots for window gardens, and an ordinary lean-to roof over the street entrance doorway, sufficiently projecting to shelter the wayfarer from the rain, and you find that you have, at a few pounds cost, knocked a little character, or say difference, into the bald and shadowless house front—little enough, perhaps, but still better than blank nothing. In the most improved of new houses, as all know, even the very water-pipe is hidden away under the brickwork, so that that little break in the monotony of the bran new street is wanting. This is the very least that might be done. We can only hint at the poor street improvement that would come of the raising by a story or two the small houses in it, and by the simply turning the roof round, so as to show a gable end fronting the street of sufficient projection forward for a good broad shadow. But a few such houses even in a long line of desolation would be quite a thing to wonder at, and to pause to look at. Our proposition, be it distinctly observed, does not involve the pulling down of the poor and dingy and darkened street, but the adding something, however little it may be, to it—even as we have said, to a single chimney-pot, if of a sightly form, and to a few boards over the street-door as a lean-to and shelter; anything, indeed, to break the monotonous nothingness of modern improved street architecture, not only as it is to be found in the new London suburbs, but in the older parts where attempts have been made to modernise them by the removal of the dormer windows, water-pipes, and other old-fashioned quaintnesses yet to be seen in some of the back streets of Westminster (particularly Old Pye-street), in Whitechapel, in Drury-lane, in many streets in the Borough; and indeed, and happily, in numbers of places out of the main thoroughfares, as in some of the narrow streets round S. Paul's. It is, indeed, difficult to understand how any one can for one moment contend that common house building is improving. The very best, the most full of art, and the most convenient house would be one yet left in a poor dingy unpainted neighbourhood, put into common and good, not ornamental, repair; and with some of the artistic features of bye-gone London house-building restored and added again to it—a blessing indeed to the London poor, and worth any quarter of a million! We have noticed only the outside of dingy street houses, for to go inside of them would involve us in no small an amount of building details, and we had almost said specification work, and because so very little needs to be done. In houses we could specially refer to, a back narrow street in Shoreditch, there is really nothing that any one of a common humanity-loving turn would need to do beyond mending of defective plaster, and the replacing of broken floor-boards, and mending broken windows, and simple cleaning. No mistake could be greater than the attempt to do too much. Once get into what is called decoration and smart painting, and newness, and small gentilities, and you drive the present poor people fairly out of the place, and so help not those who really want the help and can do nought for themselves, but new-comers find their way in, and take possession, and "improve" the neighbourhood; but where then are the former occupants—those whom you "go out for to see" and help? Nothing can possibly be more short-sighted, nay, downright stupid, than the way in which more than one philanthropic person has gone to work with their long purses to improve the condition of the "Poor of London." All they have as yet done has been to give a helping-hand to those who can hardly be fairly said to require it of them, for the simple reason that they are for the most part in a position to do at least a part of the work for themselves, are in the receipt of steady wages, and are not the "poor" in the real and *bonâ fide* sense of that word. An ordinary working man in London, in receipt of tolerably regular wages, is, of course, always in want of some object or other of either convenience or luxury, and is all the better and happier when he can get it; but the "poor" man is always in need of some actual necessity of common existence. It is such that go to the wall in the fell struggle for life in a great and populous city, and the one strait to which they are sure to be driven is to the very worst of habitations, for the worst only are left by competition to them. To the worst of habitations, therefore, you must go—not to pull it down, and build a better, for other people, but to make that more habitable, not "ornamental"—for that is throwing money away—but more habitable, and, it may be, more roomy, and, if it be really possible, to so far alter it as to take advantage of its necessary construction, and to get some little character or art-feeling of some sort or other into it, for of one thing we may be quite certain—that fine art is a want even to those who know nothing about it.

C. B. A.

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THEORY OF THE ARTS.

Art Education.—Ideas of Form and Magnitude.

(*Continued from Page* 170.)

In the preceding paper I said an experimental acquaintance with form should precede the more complex study of geometry, which deals in the relations of various kinds of extension, and in the purest abstractions. I would here, however, preface a word of explanation. I have said elsewhere that geometry is a science of the most developed and complete kind; that it has reached, if we may borrow Comte's definition, the "positive" stage; in fact, that mankind sooner arrived at exact ideas of form and magnitude than at those of other sorts of knowledge—physics, for instance; and this, because geometry was the most abstract kind of knowledge, and could be learnt without the assistance of any other kind of ideas than those of the most abstract and mental sort. Euclid's Elements, though improvable in its definitions and arrangement, is, as everyone knows, the text book and basis of all our geometrical and mathematical conceptions, and has been so for over 2,000 years. But the Egyptian or Chaldean idea of the subject was undoubtedly confined to that of the art of land-measuring, and it was left for the Greeks, Thales and Pythagoras—the last the discoverer of the celebrated 47th proposition—and notably Plato and Archimedes, to advance the art to a science in which the properties and relations of space and magnitude are considered in an abstract sense purely. Here then, lines and angles, surfaces and volumes, regardless of the physical properties of bodies, are merely so many abstractions of the mind.

But we see in this instance, however, that the science was evolved out of the art; that land-measuring preceded geometry as a science. Now this evolution is to be marked, and bears upon the theory I am expounding. The art invariably or generally was the first phase of its corresponding science. Every science has been so developed from a primitive art; all the empirical arts of the Early and Middle Ages were the germs of the scientific theories which have now taken their place, and architecture is not an exception. Again, architecture is a complex art: it is made up of knowledge of different kinds. The most simple and exact of this knowledge is that which has changed the least, and was perfected the first. Simple ideas of form, proportion, and simple mechanical conceptions were about the first and most primitive of this art. The materials employed were simply subjected to these ideas without the modifying influences arising from a diversity of circumstances and requirements which the modern architect and artist only understand. Hence the homogeneity, unity, and beauty of the ancient styles or modes of expression in architecture and poetry; and other kindred arts also attained the same completeness from ideas of the most simple and intuitive kind. Thus, the pyramid, cube, and the cylinder were the elements or types of most of our antique models. The simple ideas and relations of the triangle, square, and circle suggested all that was grand and enduring in the early formative arts of Egypt and Greece, as well as in after ages.

It can hence be understood that the early ideas of form in the abstract seconded, or rather created, the simplest architectural conceptions, or more truly it may be said, the earlier geometrical notions and architectural conceptions in the abstract were spontaneously evolved. Indeed, it may be easily assumed that no simpler idea could have possibly existed than that the materials at the disposal of man were first placed in some geometrical form, or that some idea of proportion or relation of one line to another was conceived long before even the nature of those materials was considered.

But from this self-evident conclusion, it is clear that geometrical notions formed the basis of architectural design in the abstract long before geometry was studied in a scientific manner. The art or the practical application of the science came before the theory in the same way as the art of building comes before the scientific theory, which will eventually be understood. An "abstract" idea must not be confounded with an "abstraction" in which the mental process is concerned. Geometry in its simple primitive state is analogous or representative of the first kind of mental perception. Its axiomatic truths are so intuitive and self evident that no ratiocinative process was needed to place it in a state of exactness. Now, architectural knowledge is made up of abstract and experimental sciences: hence it is in a state of confusion and discordance. However advanced our chemical acquaintance is with the materials we employ, our mechanical perfection of manufacture, our mechanical knowledge, inventions, and resources, we yet lack the power of employing these arts to the best advantage, of analysing or separating the ideas or elements we possess, or of co-ordinating them in one science; and this defect is from the want of the power of analysis and abstraction. Our abstract knowledge of the art is much the same as it was when the first temples were built, but the art has grown in complexity with an advancing civilisation, and is now become chiefly the art of utilising and giving expression to all others. It has so much that is new to digest and assimilate that it will, I fear, be a long time before architects will give to it a higher function than that of being the vehicle only of the appliances and arts of the ironmonger, carver, and decorator. So much in parenthesis. In my next I will show that the proper way to study geometry is to begin by the perception of the objective and easiest truths, not abstractions of thought.

G. H. G.

ON THE SO-CALLED RESTORATION OF OUR CATHEDRAL AND ABBEY CHURCHES.*

I NEED scarcely insist before a Society like this on the moral and intellectual value of the great and ancient monuments of our art. Of all the creations of man they go farthest to enrich and adorn the material world, beautiful as it originally is. Pictures and sculptures are for the most part confined to interiors—poetry and music lie mute on the shelves of the library till read or sung; but time-honoured monuments of architecture evermore embellish the face of the earth, and increase and complete, so to speak, the furniture of the globe; growing generally into such harmony with all around them that they seem as if, with Milton's Pandemonium, they had risen from the earth "to the sound of dulcet symphonies and voices sweet."

Taken for all in all, such works are the most interesting material objects on the face of the earth—more interesting than mountains, trees, rivers, hills or valleys, sea or sky, for they are exponents and pictures of the soul; they are man's work as well as God's work, and combine the beauty and interest of both. They are more touching to the heart than any purely natural production, for the human associations that cling around them; while, in reflecting at once the beauty and sublimity of the outward creation and of the soul of man, the great fountains of all art and beauty, they hold affinity with poetry and literature, and the highest creations of the imagination and intellect. The edifices to which my remarks will more particularly refer, the cathedrals and abbeys of the Middle Ages, are, moreover, the most vivid and characteristic relics and mementos we have of that period of European history when most of our institutions received their birth. Nor should they be the less interesting for being the actual work or design of those bishops, abbots, and other ecclesiastics, to whom we are indebted for keeping alive during the dark ages the seeds of truth and knowledge—men who by their intellectual supremacy held the head of the world above the deluge of barbarism that generally overspread society; while their origin and foundation, going back, as it does, into the early ages of Christianity, places them among the most romantic and poetic piles in the world. Monuments of the religious zeal, of the form of worship, of the priestly power, of the popular prostration, of the architectural, sculptural, and pictorial skill of ages that have passed away, they speak at once to the eye and to the soul.

To confine ourselves to home. Nothing brings us face to face with all that is interesting in the history of our own country like these wonderful monuments, on which the whole minds of our forefathers have been poured out, almost realising the wish of Job that his words might be graven with an iron pen and lead in the rock for ever. They were bibles and sacred literature and history to our forefathers; and, with their acquired beauty, they are history, and poetry, and painting, and music to us. They are our poetic mountains, our Parnassi, our Helicons, our Hippocrenes, our Muses' haunts. They breathe inspiration around them, and fill the mind, through the eye, with music, as an organ fills it through the ear with vague dreamy pictures.

It is highly important that everything that can be done to preserve these structures to us should be done. It is the mode at present employed for their preservation, their so-called restoration, on which I propose to make some remarks. Let us consider what this "restoration" means—the operation to which most of our first-rate cathedrals, that of Ely, Worcester, Westminster, Chester, and many others which I cannot name, have been more or less subjected. It is cutting away the old familiar face that has looked out upon and been lovingly looked upon by twenty generations of mankind; that has watched the birth and progress of our civil and religious liberty—the face on which the lights and shadows of ages have been cast; that has borne the brunt of time and change, weather and atmosphere, and other natural influences, and which have given it such tints and harmonies as rendered it more beautiful than in its prime—tints and harmonies that lend new gladness to the sunbeam, and that beggars all the artificial polychromy in the world; it is cutting away all that was visible to the eye of day and the eye of man, and of course all that was associated in our minds with the history, legends, and traditions of the past, and substituting for it a feelingless mask of new stone hewn by workmen of to-day; which is, in other words, robbing the present generation, and all unborn generations, of the legacy to them of the past ages—robbing them of what they ought to receive with increased interest and beauty, and sending down changelings to posterity. In the case of exterior restoration only,* it is putting the inside of an old church into a new outside one, the new one being supposed to exhibit the design and character which the old one exhibited six or seven hundred years ago; thus putting a gap of so many centuries between the exterior and the interior with regard to condition, and between the actual state of the building externally and its natural and proper state, to which time and weather and atmospheric action had subdued it.

So have many of our finest cathedrals been "restored"—too many for me to mention. They have had, each, its outside portion cut away, and another thin-walled church built exterior to it to enclose the lining of the old one, which is all that remains of the Mediæval cathedral; not only obliterating so many beautiful pictures, but wiping out so much historic record, which has been truly said to exist for us in these stone relics of the past, and whose united and eloquent utterances form one of the most interesting chapters in the history of the world. The Muse of History, utterly disconcerted by these doings, must weep over many an obliterated page of British History.

To me, this "restoration," the rude hand of which has passed over gable and tower of so many of our noblest cathedrals, seems not only treason against art and beauty, but the highest species of sacrilege that could be committed. It not only robs the church; it murders the church—destroys its centuries of historic life, and the life and beauty that a thousand agencies and influences have been breathing into it, and which, once destroyed, all the genius and skill, all the power and knowledge of man, backed by all the wealth of India or California, could not recall.

Chester Cathedral, for example, which is now suffering this operation, will, so far as the exterior is concerned, cease to be the ancient Abbey Church of S. Werburg, a relic of monachism and the middle ages, and the handiwork of the Freemasons, with history and poetry in every stone; it will be virtually a new building, a piece of modern Gothic, and not a whit more interesting, architecturally or otherwise, than a new building in the same style or styles, constructed with equal ability.

It is of no use to tell me that this treatment of the edifices in question is for their preservation, because it renders them not worth preserving. No one has a more earnest wish for their preservation than I have myself, or would more rejoice in their preservation; but this mode of preserving them is worse than a farce. It is the restoration of them to oblivion and the dust from whence they came. It is the destruction of everything in them for which we love and prize them, and for which we looked upon them with a sort of religious veneration. So treated, an edifice loses its identity, and merges its existence in another, a new and comparatively uninteresting structure; the more uninteresting from its aim to be what the old one was once, rendering it a mere archæological compilation instead of a new design, which might give some pleasure by its original beauty.

We often, it is true, take circuitous roads to our ends, or use means apparently calculated to frustrate rather than accomplish them. We stoop to conquer—we go backwards a few steps that we may take a greater leap forwards; but while in our senses we never go counter to the laws of nature. We do not tell lies, for instance, to promote veracity, or rob and murder for the sake of justice and humanity. But in this work of "restoring," reason and sense are completely set aside. A cathedral is destroyed in order to its preservation; it is partially taken down to make it last the longer; which is not unlike knocking a man down to make him stand firm, or, to take a more accurate figure, it is flaying him alive, and substituting for his natural integument some foreign material for the good of his health. It is even worse than taking the skin off a man; for a man with his face disfigured, and his skin destroyed, while the immortal spirit remains with him, is still a man "for a' that," the essence of his manhood being not in these external features. But of the buildings in question the essence and part of main interest is in their face or surface; and not in the interior only, but in the exterior, which by the restoring process is for ever annihilated. Kernel and shell of a cathedral are alike the product of mind, sometimes of genius.

Against this kind of restoration, in any degree, I would protest. Where it is only partially perpetrated it is proportionably destructive, as it is in the Church of S. John, Chester, which has had little more than its clerestory re-cased; for no lover of the picturesque and beautiful who visits Chester, and recollects what that building was twenty years ago, can fail to feel that virtue has gone out of it. I would protest against any kind of restoration that removes the old face, which in every instance, in our climate, must be more beautiful by the cosmetics of Nature than ever it was in its prime. Even against that lately adopted at Carlisle Cathedral, a skinning operation, or merely cutting away an inch or so of the surface, which though in some respects not so bad a one as the other, inasmuch as it still leaves old stone to the light, is yet a sufficiently barbarous one.

Nothing like to this "restoration" was ever done by the Mediæval architects themselves, the original designers of our cathedrals, who met the exigencies of their day in reference to church accommodation in quite a different manner. They never made any attempt to restore the original design, which they would have felt to be a retrograde movement—neither agreeable to their own genius nor consonant to the way of art—but pulled down a decayed or insufficient part when it was necessary, and made what additions or enlargements were required, in their own style and from their own designs. By so doing they have approved themselves architects, and have left us the surpassingly romantic and enchanting piles which we are now disenchanting.

"Restoration" is a process to which there is no analogy in Nature, as there is of every operation of genuine building. Nature builds, and invests, and cements and tints, and gilds, and beautifies, but she does nothing analogous to this. When she restores, it is from within the operation proceeds, and works outwardly. When an animal sheds its coat, that coat is renewed with increased life and beauty from the vital principle of the animal—not replaced by a dead integument without assimilation or vitality. Nor does restoration resemble any genuine restorative operation of man, as picture-restoring or the rebinding of an old book, in which latter operation the part of main interest and value, nay the work itself, remains intact, and with greater protection than before, only the worn-out unessential accessory being removed.

Genuine picture-restoring is a totally different thing, and bears no analogy to it. It is merely cleaning the picture, removing the old varnishes, and restoring any part that is entirely obliterated to as near what it was as can be judged by the context, that is, the surrounding parts. The restoring painter does not go over the whole surface of the picture, as the restoring architect goes over the entire building, and repaint it (hiding what is underneath) to what he supposes it must have originally been. If he did this the picture would become worthless, and in proportion as it approaches this state it deteriorates in value. Let a picture by Raphael or Titian be so treated by a modern artist, however eminent, and instead of the three or four thousand guineas it might have been originally worth, it would not bring as many shillings.

Let me not, however, be supposed more conservative than I am. I do not object to the supplying the often partially ruinous buildings in question features or parts which are absolutely destroyed, to repair mutilations produced by accidents or violence, or supply omissions in the composition and design of any otherwise fine example, as in the addition of a spire, which, in furnishing a counterpoise to the nave arches, might add to the security of the building. I would in every case tenant the empty niches with statues, restore a destroyed canopy, pinnacle, or parapet, and would do anything that would really add to the perfection of the pile.

On the other hand, I would remove from the cathedral anything that has no right to its place on or about it—any excrescence or thing that really mars or veils the beauty of the original design, which, however, is of rare occurrence in England, English cathedrals being in general beautifully situated, with romantic natural accessories, and not, as are many of the French, insulted by the contact of wretched hovels built up against their sides.

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* By Samuel Huggins. Read before the Liverpool Architectural and Archæological Society.

* Some, I believe, have been "restored" both outside and inside, which is utter annihilation; but as I am not acquainted with any instances of this, I confine my remarks to exterior "restoration," which is sufficiently destructive.

If asked, in reference to their preservation, what I would do with these buildings, I would answer, Let them alone; and seeing that they are confessedly the architectural embodiments of a form of worship of other days, and of generations differently educated to the present one, to which all their adaptations and symbolisms refer, and consequently unsuitable forms as regards their present uses, employ all the money that can be collected, and which I am quite sure would be amply sufficient for the purpose, in entirely building suitable ones, exactly adapted to the Protestant worship, a course by which we should have, in each case, two cathedrals—one a really useful one, and the other left in its integrity and beauty, a venerable relic and truthful witness of the past, instead of one bad one, ill adapted, uncomfortable as a church, and spoiled as an antiquity, for which it was chiefly of interest and value.

This plan, moreover, would open a new field for originality in ecclesiastical design, and assist architects in recovering their lost place as architects; for restoration is not the work of an architect, but of an archæologist. It is the glorious prerogative of art and architecture that, like poetry, it makes all its materials new for the gratification of a divine instinct in man; but on the new stone mask that is set up in a restoration, instead of the old face of the building, the architect has no scope for the exercise of any of the faculties of an artist; taste, feeling, and imagination, if he have them, exist in him in vain, for no life, or sentiment, or emotion can be exercised on his work; in which, be it known, he is not aiming at some ideal type of beauty in his own mind, but merely copying the supposed forms and lines of the original building, arrived at by putting together broken bits or fragments of the old work, and consulting any lifeless drawings or engravings that may happen to be extant, and that will throw any light on the original. It is an operation merely of archæological knowledge, industry, and mechanical skill.

The plan I propose, moreover, would yield opportunity for resolving the best form for Protestant churches and cathedrals, and showing that the Gothic style of architecture would consistently lend itself to any form—to the right one as well as to the wrong one—to a compact octagonal, hexagonal, or circular form, as well as to the cruciform.

As to the old buildings, I believe in a majority of instances, with their enormously thick walls, they have sufficient strength left in them to brave the tooth of Time, and be the delight of all men of taste for ages to come, increasing in interest and picturesque beauty for every succeeding generation; and when they fall to ruins being more interesting and beautiful still; a state to which, however, if duly protected, they would be many centuries in reaching; for those buildings that have reached it, as Fountains Abbey, and the Abbeys of Melrose, Kelso, Elgin, Jedburgh, it is well known did not reach it by the action of any agent that is now operating on our cathedrals, or by anything short of violence, accident, war, or religious fanaticism of the Reformers. "Preservation," not restoration, should be our watchword, and our motto "Do as little as possible, so that the old fabrics only hang together as long as possible."

In especial cases especial means of preservation might be used. Where the historic interest of a church was surpassingly great, I would do with it what we should all do with an object of great artistic beauty or precious material, when that object was only a few inches in size either way, instead of so many hundred feet, and what I have a faint recollection of having seen suggested by some writer several years ago. I would put it under a glass shade. Suppose we had amongst us a building in which St. Peter or the Apostle of the Gentiles was known to have taught, or in which their Master Himself had taught, I would prevent farther injury from weather by enclosing it around and above in a sort of crystal palace of iron and glass, with a passage of some ten feet all round between the building and its case.

I appeal to the educated common-sense of mankind generally whether there is not a vast difference in interest, leaving artistic or acquired natural beauty out of the question, between the genuine ancient building and the same building as restored: one the headwork and handwork of men of other days, and very different days from ours, the other the mere handwork of our contemporaries. I feel sure that a thousand intelligent travellers, if they answered consistently with their published remarks, would reply to me in the affirmative. Nay, I could quote the remarks of as many in journals, diaries, itineraries, note-books, and the like, which would be quite tantamount to such a reply. I happen to recollect more distinctly than any other those on the neighbourhood church of Bebington, in Cheshire, of the well-known American writer, Nathaniel Hawthorne, which I will give you as a specimen. What is it that interests and attracts him in this church? It is that every part of it, especially the steeple, "looks old, old, old." "There it stands," says he, "among the surrounding graves, looking just the same as it did in Bloody Mary's days; just as it did in Cromwell's time." What could he have said about this church, or would he have noticed it at all, if all of it that Queen Mary's or Cromwell's days had looked upon had been cut away, and everything about it was new, new, new, as will shortly be the case with the once venerable cathedral of the diocese? To the non-professional, merely educated man, who takes no cognizance of artistic or picturesque beauty, but only of the historic interest, the difference must be sufficiently great. But even the historic interest is more felt by the architect, or others capable of understanding at the same time the changes of style and of feeling the full force of the beauty that time and climatal action bestows.

Suppose, Sir, your annual tour this next summer to be into the East—to Egypt, to Syria—you wish to see those far-famed wonders, the Halls of the Pharaohs, built before the exodus of the Israelites, the birth of Moses or Job, or even the call of Abraham; or you would visit some of the earliest Christian churches and monuments of Syria and other parts of Asia, as the church of SS. Sergius and Bacchus at Constantinople, the church of the Nativity at Bethlehem, the Mosque of Omar at Jerusalem, supposed to be the church built by Constantine over the tomb of the Saviour. Some one edifice would probably attract you to its site more than any other. Imagine yourself finding this one edifice "restored," and you could now neither see nor touch the original building; would you not be greatly disappointed, and anxiously inquire if there did not remain untouched some small bit of the ancient work, even a few square feet or inches, and if you found such invulnerable bit of the original building, would it not be in that the interest for you would henceforth inhere? Should you go on to the far East, and visit the cave-temples of the Hindoos, what would be your feeling of disappointment if you found that those mysterious works of the early Brahmins and Buddhists, the original of which is lost in the night of ages, had just been re-cased or re-lined by English masons?

But we need not go to Asia or the far East for illuustration of the principle I contend for; sufficient may be found in Europe and nearer home. The west front of the Burg at Vienna, the Castle of S. Angelo at Rome, the Ducal Palace of Venice, the Tower of London, the Kremlin at Moscow, are trophies snatched from the jaws of Time, and prized, I believe, as such by their respective nations. Let these be built over with new stone, would they be so still? Re-case the White Tower in London, restore the Bloody Tower on the Thames, could they be shown to the traveller any more as the work of Gundulf the Weeper and Henry III.? I have myself seen and touched, with intense pleasure, in the foundation of the walls of Chester, blocks of masonry that bear the unmistakeable impress of the colossal hands of the Romans, and so coeval with Christianity itself. Think you I should have had the same pleasure if these stones had been entirely covered with new materials, and I could neither see nor feel the original work, which, in receding from my touch and sight, might as well be a thousand miles away, or in Rome itself?

I once made a journey to York solely to see its venerable Minster, which I sauntered through and around with deep interest and delight. What was it gave me this pleasure? It could not in any great degree be the beauty of the general design and composition, nor that of the sculptural detail, for these were not new to me; I had seen them on paper a thousand times before. It was the acquired beauty of the structure, the beauty bestowed on it by the artist hand of Nature, and which no views of it could give. It was its historic associations and reflections of the minds of other times, of the intellects and hearts and fancies of men of a most mysterious age. It was these that so delighted me, and not the magnitude and design of the building. If I could have found such a structure as this, or the corresponding one of Lincoln or Wells, or Lichfield or Peterborough, renewed without disappointment or decrease of pleasure, I must have been insensible to the rainbow hues of some of the most exquisite pictures which the pencil of Nature has spread over this world; as well as blind to the still more touching pictures, warm and rich of the old times, which start into life to the inner eye round such ancient and romantic piles. In a word, I must have been void of imagination and feeling for the past, and a stranger to association of ideas—faculties

> Which out of all the lovely things we view
> Extract emotions beautiful and new —

and consequently without claim to the title of artist.

It is to the actual surface which we have seen and handled that association clings, whether the object be wall or ground. "My battlefield has been altered," said Wellington, disappointed, on revisiting Waterloo after the soil had been dug up—the soil on which he had struggled with Napoleon—to form the great monumental mound there raised. It was the same operation of the law of association that led the Pisans to bring earth from the Holy Land, on which holy feet had trod, to floor their Campo Santo; that caused the bringing home of the sculptured linings of the Assyrian palaces, and that even originated the Crusades. It is what gives interest to the interior of the Egyptian Catacombs, the Catacombs of Rome and Naples, and makes the visitor so delighted at Pompeii. It is a source of mental gratification, acknowledged through all literature and history. Fewer would visit Southern or Eastern lands if the sun of those glorious climes shone only on restorations. Fewer would visit even our British Museum if the relics of the Parthenon and other ancient shrines, and the winged bulls of Assyria, were replaced by casts.

It is generally supposed that for the loss of all the historic interest of a restored edifice, and of the beauty that time and weather had bestowed on it, we are compensated by getting back its original architectural beauty; that is, that the building is actually restored to the condition in which it came out of the hands of its author. But this is a great mistake—nay, more, I believe that "restoration" not only does not bring back the original beauty of the building, but it takes away what little may have remained of it. I do not see how any edifice that is really a work of art and the offspring of cultivated taste, in which, however dilapidated its condition, there must be some lingering, some vestige, of its original charms of outline and composition—I do not see how it can be at all treated in the way in question, by the most able and delicate hand, without injury. The soul and spirit of architecture is enshrined in its surfaces, and all charm and beauty of outline results in great part from beauty of surface. Let the Indian mausoleum called the Taj Mahal at Beejapore, the solemn and expressive beauty of which it is said moves its visitors to tears, let it undergo this process, and would men and women approach it weeping? This is an extreme example, the tomb of Nour Jehan being among the most graceful structures that ever reared their domes into the welkin; but the principle applies to all works of art, and it can be no true work that does not lose what grace and dignity remains to it by such treatment.

The restorations, as far as they have gone, at Chester Cathedral have been as ably executed, I suppose, as such works can be; but I will venture to say that there was far more of the spirit of the original in the old tower of that cathedral, dilapidated as it was, before it was touched by the architect, than in the tower as restored, which has none of the grandeur it unmistakably possessed in its former state. As to the rest of the work, I mean in the body of the building, any one may see, upon contrasting the reproduced tracery and ornament with what remains of the old, the grace and delicacy of which is exquisite, that the new carving is a mere apology for what the original must have been in its prime. The entire cathedral, besides having all the want of interest of a new erection, will be a work of a lower class of art than it was before.

There is something calculated to shock an artistic and delicate imagination in the very idea of this mode of arresting the decay of a great building, which, though it may be a very proper one for dilapidated warehouses, barracks, magazines, or other engineering works, is abhorrent to the airy ethereal nature of architecture.

I have made in the foregoing remarks frequent mention of Chester Cathedral, not from any ill-will towards those concerned in its restoration, but simply because it is the cathedral with which I am best acquainted, from having resided for some years in Chester; because it is the cathedral in which I have been most forcibly impressed with the surpassing interest and beauty of these structures; and because, being the cathedral of our own diocese, it is the one with which you also will naturally feel interested. For myself, I recollect when I was living in Chester there was nothing that gave me a respite from the low and depressing cares of ordinary and daily life, and calmed and soothed me, whilst it delighted and and gave wings to my imaginatfon, like a visit to the cathedral, more especially the unique chapter-house and beautiful cloisters. The cloisters, which I most frequently visited, virtually took me out of the present life; when I had left the fashionable resort of Eastgate Street, a few minutes' walk has conducted me in effect into the Middle Ages, which seem to linger beneath these magic arches—from the nineteenth into the thirteenth century; so eloquent of the past, so redolent of the hopes and fears, the joys and sorrows, of other days, is this cloister: a gem of the past world, glittering among the rubbish of the present one; and which, on my return into the gay and lively city, seemed like something recollected in a dream. No novel of Scott or Fielding, or play of Shakespeare, I feel sure, could so have transported me out of my daily mood into a world of poetry and romance as a visit to this cloister, haunted by a thousand memories and reminiscences of the past, which meet you at every turn—spirits gladder and brighter, I ween, than the present age will bequeath to a future one. The whole place is alive, glowing, eloquent with story. But this is not all; its value is not limited by its historic associations: Beauty sleeps beneath these arches, and sunlight, when it wakes her up, looks lovelier than elsewhere. Here, more than anywhere I know of, has architecture been heightened by the weird sculpture and arabesques of Nature, in the shape of flowers and mosses. Architecture and Nature, like music and poetry, have here met and coalesced, and the whole breathes an atmosphere of fairyland. It contains an inexhaustible mine of material for the artist-painter in search of the beautiful and poetic, that only a host of agents—accident, repeated additions and alterations, changes of style, weather, vegetation, and centuries of time—could have created; and here and there presents subjects which, for effect of powerful and vivid light and shade, Rembrandt himself would have been delighted to paint. I consider the cloister of Chester Cathedral, whatever its architectural merit, has become by its association with Nature one of the most touchingly beautiful and poetic objects in England. Nature has with every delicate grace invested it, and not only has she marked it for her own, but she revels and rejoices in the possession of it. Nestling as it were into the bosom of the ever-blooming mother, it seems as much a production of Nature as of art—as much a growth from the earth as an erection of man upon it. "Clothed in part with a vegetable garb, it appears," to use the language of Wordsworth in reference to some kindred objects, "as if it were received into the bosom of the living principle of things as it exists and acts among the woods and fields," and belongs more to the green earth and the glorious sky than to the busy city.

We are told that this cloister is not to share the fate of the cathedral at present. It is greatly to be hoped that it never will, and that for this lovely and sequestered spot "the bitterness of death is past." It is to be hoped it will not be touched beyond the rebuilding of the entirely destroyed south side. There is even less excuse for molesting this part of the cathedral than any other, as, in the common sense of the word, it is of no use, and exists only for beauty, and can only be considered as an ornamental accessary to the Protestant cathedral.

The principle for which I am contending does not apply to the great masterpieces only of our art, but to the country parish churches, many of which, though possessing small pretensions to architectural merit, are yet, as they stand half-buried in foliage, most perfect gems of beauty and grace, especially valuable to the landscape painter, to whom indeed they are among the most delightful objects on earth, and by whom their "restoration" everywhere going on must be felt as a calamity to be deeply deplored.

I am profoundly convinced that when, in the progress of taste and true feeling in relation to art, the public mind shall become attuned to the highest notes of architecture, and able to appreciate the touching beauty arising from the exquisite and poetic blendings of architecture and nature, that it will look with a mournful regret on this restoration, *alias* destruction, of these and the greater class of edifices of which they are the offspring—a class of works which, in the sublimest lands, would add fresh beauty and sublimity to the scenery; regret something akin to that with which those ancient Jews of the Captivity looked upon their second temple, remembering the superior glory of the first; and turn with disgust and loathing from these new and false faces of their old friends.

Let it not be supposed that for the evil I would expose in this paper I am blaming the architect alone, who is probably generally overruled in the matter, and without sufficient influence to resist the popular rage. The evil is due mainly to a dearth of taste and ignorance of art among the wealthy and educated classes, even amongst the most learned and refined. The class chiefly to blame, I believe, is the clergy, who, I regret to think, have otherwise greatly injured the study and thwarted the progress of architecture, by their undue interference in the style and design of ecclesiastical edifices. I say undue interference, for nothing but the devotion of a lifetime, or at least of long years to the study—an amount of study which no clergyman can give to it consistent with what is due to his own great science—could qualify any man for dictatorship in architecture. I make this charge advisedly, from the observation and experience of many years, and without any irreverence for the sacred office of the priesthood.

I feel sure, however, that if architects had that high artistic feeling and degree of culture which becomes the architect, and had a due appreciation of those beautiful relics of the past, no body could or would dare to touch them. It is, I believe, against the best interest of architects to have the exceeding beauty of these works destroyed—beauty which is continually increasing, as every year adds a scale to the shell-fish; for nothing would go farther to educate their own sense of beauty and that of their clients and the public, and at the same time show the latter the value of art and architecture, than those doubly-blessed objects, left uninjured in all their acquired and venerable beauty.*

Professor Donaldson and Mr. Edmund Sharpe have recently protested against a great abuse which has gradually sprung up among us, that of colour in the interior of churches. It is to be hoped that leaders of the profession will also raise a voice against the most mischievous, because more irremediable, abuse to which I here call attention.

In conclusion, it may be thought that my language in this paper is over strong. I believe it is not stronger than the occasion calls for; and I could not honestly or truthfully use milder. If I have spoken strongly it is because I have felt strongly, and because I am anxious that my words should take effect. I have felt the evil I complain of as a severe personal loss, and I cannot think that in this I stand alone, since those feelings which it offends in me are in a greater or lesser degree common to mankind. Let me indulge the hope that, however disagreeable my remarks may be to some individuals, the intention of personal offence to any one will not be imputed to me. No one who knows me will suppose that I have any personal interest to serve by them.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE twenty-eighth lecture of this course was delivered by Dr. G. G. Zerffi in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon last. In commencing, the lecturer observed that the Northern Teutons had exactly resembled the old Greek heroes, as described by Homer. They had lived in fighting, and had met death in battle, and, firmly believing in the immortality of the soul, had gone to war with the same light-heartedness as to a dance. The analogy that existed between these Northmen and the warriors of the old world was explained when we reflected that the many Teuton tribes were members of the Aryan group, and belonged to the same family as the Indians, whether Buddhists or Brahmans, Persians or Greeks. When the great migration of the Aryan peoples had taken place, and the Bactrians, Pelasgians, Thracians, Phrygians, &c., had peopled the south and south-west of Europe, some tribes penetrated to the north and north-west, bearing with them the language, customs, and religion of their ancestors. These customs had, however, been changed and modified by their contact with the aborigines. In their new northern abode they had been forced to make themselves acquainted with Nature, which influenced them at every step. The sky was misty; the woods endless and impenetrable, affording refuge to numbers of bears, foxes, wolves, &c., which had to be hunted and killed. Rivers and rivulets abounded, overflowing the plains in spring and producing swamps in summer. It was not surprising that, surrounded as they were by a nature cold and inhospitable, they should have peopled the forests with dwarfs, elves, and dragons, and the rivers with Nieks. These latter were dangerous little spirits, with bright eyes and beautiful tresses, and sang on the borders of rivers and lakes, enticing young knights to plunge into the stream in the hope of sharing their splendour and happiness. Full many a song recorded the misfortunes of knights who had fallen asleep on the banks of the rivers, and who had infallibly been drowned unless they had resisted till a cock crew. These legends, transformed into prose, merely recorded the difficulties encountered by the early Teuton settlers when they had established themselves in the dreary northern regions of Europe. The metaphors in the old songs of the Edda also referred to the continued struggles between man and Nature. The horse had been a ship, serpents had been swords, the oak and the pine trees had been giants in splendid battle-array, and the waves, sisters of the warriors bathing their brows when they wearied of the contest. Nature had not, however, been supposed to have been peopled by malignant spirits only. Stone and wood which, in the form of huge rocks and vast forests, had overawed man, afterwards enabled him to construct dwellings, and the swollen and mighty rivers had served him as high roads. Every leaf and flower, too, had its fairy tenant. Spirits and elves danced on the grass in open places by moonlight, creeping forth from their hiding places. Gnomes and dwarfs were at work beneath the surface of the earth, and were, many of them, friendly to man. In considering the ornamentation of the Scandinavians, Kelts, Normans, &c., we had again before us the Azoic or lifeless period of art. Their monuments were outgrowths of the first impressions of creative nature, and their religion had partaken of the same character. They had one superior God, Wodan (Guodan, Godeu, Guten, Gott, God; from it we have Wodan's day, Wednesday) who was said to have been Buddha. He was the Universal Father. Next to the father of all they worshipped Nerthus, the nourisher, Earth. In common with the old Indians, they had had a great veneration for trees and groves. During the worship of Nerthus, their spears had been consecrated and peace proclaimed until the priests had reconducted the goddess to the sacred lake. The slaves who assisted in the rites had been swallowed up by the waters of the lake, and hence a mysterious fear had arisen as to what that might have been which only those about to die bad been permitted to see. The dwellings of these Northmen resembled those of the Greeks of the Homeric age, those of the chiefs having been surrounded by a wall strong enough to serve the purpose of defence. The court had been divided into an outer and inner court. The first had been provided with stables and barns, and the latter with the dwellings for men. The principal building had corresponded with the Greek Megaron, which had been oblong, and divided by wooden pillars into three parts. In the midst of the southern or eastern pillars had been the seat of the master of the house, the seat of honour; opposite to this, on a lower platform, had been the second place of honour. These seats had been surrounded on both sides by benches, the hearth having been in the midst. In general the position of the house had been, like that of the Egyptian temples, from west to east, exceptionally from north to south. In the first case the seat of honour had been in the south, in the second in the east, always facing the light. The pillars of the seat of honour had reached above the roof, and had been adorned with sculptured heads of Thor (the God of thunder—Thor's day, Thursday). These pillars had been connected by a wooden framework, which had served both as lantern and chimney. There had been no windows, the hall having been of the same height as the house. At the end of this hall, on a raised platform, has been the seats for women. This kind of stage had been separated from the rest of the hall by a lattice, behind which the women sat and worked; they had, however, been able to join in the conversation of the men. The side spaces had generally been separated into small compartments, and used as bedrooms. The spaces between the platform for the women and the last pillars had been elongated, and had served as store-rooms and larders. Before the hall, opposite the women's tribune, had been the golf, or entrance hall. This had been provided with a low stone hearth, and was raised so that steps led into the hall. Doors had been situated on both sides of the Golf. Before each door there had been a small out-house, large enough to serve as a cellar or store-room. In this description of the plan of a Northman's house we recognised the principle of constructing several detached buildings for one common purpose. In this the fundamental character of the Teuton spirit showed itself. *Individual freedom* was the basis on which they had built up their social, religious, and artistic development. The dwelling-houses Skäli (châlet, castle) had been like every free Teuton, a detached whole; everything had been separate and yet combined, forming a homogeneous total. The principal hall had generally been 150ft. long, 78ft. broad, and 78ft. high, and had been wainscotted throughout. The house had often been provided with suspended upper-rooms (*Lopter*, lobbies), which had been reserved for the numerous followers of the master. Besides this there had been the general hall, parlours, rooms for conversation, rooms for attendants, and houses for the women, with a working-room or boudoir. Upper stories approached by outer staircases had not been unusual. The bedrooms and also the cellars underground had been separated, the kitchen and the washhouse having been connected by subterranean passages. The same principle of individualisation or isolation had shown itself in the other parts of the houses. The bake-house, malt-house, granary, barn, and stable, had each been provided with a separate entrance and roof. The whole had formed a group of buildings around the dwelling, and had all been arranged according to the laws of symmetry, subordinating the secondary parts to the primary elements of the whole plan, and bringing variety into unity. This architectural system had been inherited. It reminded us of the descriptions of the old Indian houses in the Ramâyâna; of the Græco-Roman edifices, and even of the plan of Chinese buildings. These constructions had been of wood. Wood had been the real material of Teuton ornamental art. Wood-carving had paved the way to stone sculpture, which had retained to a high degree the original motives. The carvings, especially those at the ends of beams and rafters, had been painted. The ornamentation had been quite in accordance with the impressions received from Nature, the predominating forms having been grotesque animals and confused winding or interlaced lines, which reminded us partly of Indian, but more particularly of Mexican productions. The old Scandinavian and Keltic monuments might be classified in the following manner: (1) Minne-blocks, (love-stones) grave-stones; (2) frontier or battle-stones, — monuments erected in commemoration of important events, not funereal; (3) miscellaneous objects, such as carvings, weapons, jewels, tools, playthings, utensils, &c. The patterns of ornamentation on stones, jewels, weapons, and houses, all bore a remarkable resemblance to Asiatic forms. Tapestry must have been known, and had given rise to imitations in wood. The floors of houses and churches had been generally of clay, covered with straw and mattings. At great festivals, however, the floors had been covered with cloth, and the walls ornamented with tapestry, the work of Teuton women, who from the earliest times had excelled in works of this description. In opposition to the rotten and hollow institutions of the old so-called civilised world, the Teutons, who had embraced the doctrines of Christ, became the pioneers of the modern world in religious fervour and self-denial, as well as in politics. We might distinguish three distinct historical epochs in the growth of Mediæval art. The first epoch lasted till Charlemagne, and art during this period was altogether subservient to religion. The secular and the spiritual were united under different aspects. The second epoch brought a revival of the old Eastern spirit of theocracy, whilst the state sank into a kind of Indian Feudalism. During this period Christian freedom was entirely perverted. We should see a revival of slavery in the form of subjection on the one hand, and immoral licentiousness on the other, and the art of that period reflected these two directions with unmistakeable clearness. The third period began after Charles V., when secularity, conscious of its power in science and art, freed itself, regained its creative and unlimited force, and turned back to the glorious patterns of the Greeks which had been lost. Nature and beauty were studied for their own sakes; art was practised for the love of art, and no longer served, as it had done, the purposes of an established creed, but became so connected with religion that it was recognised as a powerful civiliser, a teacher in itself, independent of the faint lustre to be obtained from some special theological system. Art rose like a phœnix from the ashes of the past, and reproduced the variegated forms of Nature stamped with the seal of the intellect of the artist. The first of these epochs will form the subject of the next lecture.

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* It might be hinted to deans and chapters, and churchwardens, that English churches, great and small, are only placed in their hands in trust for the public, to whom they properly belong; and that while there is a portion of that public, however small, refined enough to appreciate them as works of art ennobled and spiritualised by Nature, they (the deans and chapters and churchwardens) have no right to despoil them as such, which they certainly do when they cut away all on which Nature has breathed, the old features or façades—the parts which alone appeal to the imagination, and wind themselves round the hearts of the susceptible.

THE STONE PERIOD IN GREECE.

INFORMATION concerning the Stone Period in Greece may be interesting, says a writer in the *Athenæum*, to many of your readers, and new to most of those who occupy themselves with the study of pre-historic archæology. The oldest antiquities in a country long visited by able observers in search of antiquities have hitherto, by some unaccountable oversight, almost entirely escaped the notice of travellers and antiquaries, though it is evident from several passages of Pliny's "Natural History" that they attracted the attention both of the Greeks and Romans. These pre-historic relics are much more numerous than might be supposed from their having been so long overlooked; and, indeed, their number is a reproach to antiquaries in a country where so much attention has been devoted to the search for antiquities by observers from every country in Europe. The writer of this letter directed the attention of the dealers in coins and antiquities to the importance of relics of the Age of Stone, and gave them a money value, by printing, in 1869, a pamphlet, in Greek, on Pre-historic Archæology in Greece and Switzerland, which he distributed over the country as widely as lay in his power. The only pre-historic relics that had long attracted notice were the artificially-formed fragments of obsidian, which, when found in the tumulus of Marathon, were misnamed Persian arrow-heads; but which the writer observed, in 1836, must have been mixed up in the soil when the earth was heaped into a tumulus over those who fell at Marathon. Sixty years ago, Sir William Gell picked up similar fragments, which he called flint, at the *triodos*, where the three roads, from Livdca, Daulis, and Dystomo to Delphi, unite at the entrance of the pass between Parnassus and Cirphis. Gell, under the impression that the fragments at Marathon were Persian arrow-heads, says of those he found at the *triodos*, that they were "perhaps a confirmation of the discomfiture of the barbarians in the *Odos Schiste*." Similar artificial fragments of obsidion have now been found in many places in Northern Greece, the Peloponnesus, and the islands of the Archipelago.

The only collection of stone axes or celts which existed besides that of the writer, previous to the distribution of the pamphlet, was formed by M. von Heldreich, Curator of the Museum of Natural History at Athens, and may be seen in the mineralogical collection at the University. Since the circulation of the pamphlet, the writer has increased his collection of stone relics, independent of knives and other pieces of obsidian, from not more than a dozen objects to upwards of 250. The stone axes or celts alone amount to 170, varying in size from under an inch in length to upwards of six inches, and are of the forms represented in Sir John Lubbock's "Prehistoric Times," p. 68, and Sir William Wilde's "Descriptive Catalogue of the Antiquities in the Museum of the Royal Irish Academy," Vol. I. pp. 41 and 45. The greater number are smaller than those preserved in the museums of Switzerland. Dr. Keller, the kind and zealous President of the Antiquarian Society of Zürich, pointed out to the writer, in the summer of 1868, six or seven good specimens of the common forms and material in Greece, which had been collected in the island of Euhœa, and presented to the Museum of Zürich. The long, flat implements, that resemble chisels, are rare, because they were easily broken. The finest in the writer's collection is six inches long, an inch and a half broad, and three quarters of an inch thick. It is of a green stone, as is apparent from a fracture, but the surface is white, probably from the effect of fire. Hammers are also rare, but the collection contains two pierced with round holes for handles. In form the hammers resemble those found in other countries; but one is triangular, and another, which is two inches and a half long and nearly as broad, formed of a beautiful dark green stone, resembling heliotrope, has one side beautifully polished, to serve as a polisher. One of the axes, nearly four inches in length, is of the same beautiful material, and has been highly polished, but its edge is almost entirely broken off. Sling stones, oblong, oval, round, and flat elliptical stones are also found; and several polished triangular stones, of various sizes and different forms. A few stone points or borers have been also collected.

The stones of the greater part of the implements found in Greece are finer and harder than those that are found in the rest of Europe. The greater number are of grey, greenish grey, and brown stones (apparently varieties of diorite), green stone, porphyric stones, and brown iron-stone. Many are also black, from lustrous velvet black to dull brown, Lydian stone, basaltic stone, and iron-stone, which from its polish has a metallic lustre, and looks like steel, but is not magnetic. A few of these dark stones, but not the heaviest, are magnetic. Red jaspery, iron-clay, and granitic stones are not uncommon. Seven or eight of the smaller celts are jade or nephrite, varying in their green colour, and in their degrees of hardness. There is a small chisel of amethyst, rather more than an inch in length and nearly half an inch broad, with two notches on the sides for tying it to a handle. There is also a small-axe-shaped celt of carnelian, an inch and a half long and an inch broad. I fear to fatigue your readers with details that might prove interesting only to students of pre-historic archæology.

It would be a step towards enlarging our knowledge concerning the pre-historic population of Greece if we could ascertain with certainty the character of the sites selected for their villages or towns. Where many families dwelt together, positions adapted for defence with stone hatchets, obsidian arrow-heads, and sling-stones, or casting-stones, from the hand, would be occupied when they had easy access to a supply of water, from which it would be difficult for an enemy to cut off the communication. It is probable, therefore, that when the lakes of Greece shall have been carefully examined by intelligent observers, traces will be found of lake-dwellings similar to those of Switzerland, Italy, Ireland, and Scotland. The plain of Dohrena, near the ancient Thisbc, must have been a lake in pre-historic ages. Works remain which, in very early times, converted it from a marsh into land capable of cultivation; and these works were, of course, ascribed to Hercules. They still serve their original purpose, and upbraid modern energy and intelligence, which cannot dominate the waste of waters at the lake Copaïs. Many fine stone implements have been found at Dobrena. From Tanagra a good many specimens have been obtained, and a good idea of the defensible nature of the site and its facilities for commanding a supply of water may be seen in the sketch given in Leake's "Travels in Northern Greece," ii. 453. The site was as well adapted for the men of the Age of Stone as for the Greeks of the heroic and classic ages. Another class of pre-historic habitations will be found in sites that offered very slight defensive advantages in later times, when the knowledge of metals gave men greater powers of attack. One of these villages of the Stone Period occupied a secluded position in the range of hills that connect Parnes with Pentelicus, overlooking the plain of Aphidna. It is an area surrounded by heights, protected against the cutting north winds of winter by rocks which form a precipice barring all access from the plain below, except by the gorge of a small ravine which afforded the supply of water. Large quantities of chips of obsidian, as well as numerous artificially-worked fragments, are found all round embedded in the soil. Other sites might probably be ascertained from the quantities of obsidian scattered about. At Kephisia and Aghias Kosmas on the Attic coast they exist in great quantity; and it must be observed that obsidian is not found either in Northern Greece or the Peloponnesus, and must have been transported in the boats or canoes of this Age of Stone.

Another interesting subject for investigation will be to ascertain from whence the stones were obtained of which the implements found in Greece are composed. Many were evidently worked out of the rolled pebbles found in different parts of the country, which were selected from experience of the toughness that was combined with their hardness, and from their natural form requiring the least possible labour to give them the desired shape. Red jaspery, iron-clay, and brown argillaceous iron-stone are found as rough pebbles in the glens of Euhœa, and celts fashioned from them are not uncommon in the island. Jade, amethyst, carnelian, and Lydian stone were perhaps brought from other lands.

IMPROVED DOOR FURNITURE AND CASEMENT STAY.

AMONG many useful inventions introduced by Messrs. William Tonks and Sons, of Birmingham, two are well worthy of attention. One of these is their patent keyed door-furniture. The inconvenience attending the use of many of the older forms of door furniture from the insecurity of their attachment to the door where the requisite adjustment is obtained by using a loose spindle sliding into, but not secured to the knob, is entirely done away with by Messrs. Tonks's improvement. One of the knobs is securely fixed on the square of the spindle, when screwed up to the required position, by an iron dove-tailed key. An iron plate intervenes between this and the door to protect the latter from friction, which is received in and covered by a compound rose differing in construction from those usually employed, which covers it, and is screwed on to the collar of the iron plate. The results of this arrangement are great facility and security of fixing, exactness of adjustment, and impossibility of its disturbance.

The wedge casement stay is another simple but ingenious contrivance. The simplicity of its construction allows it to be made of wrought iron, either plain or covered with brass, and thus sufficient strength is afforded to resist the strains under which stays of the ordinary make often bend or break. The fastening is based on the wedge principle, and is secure and simple.

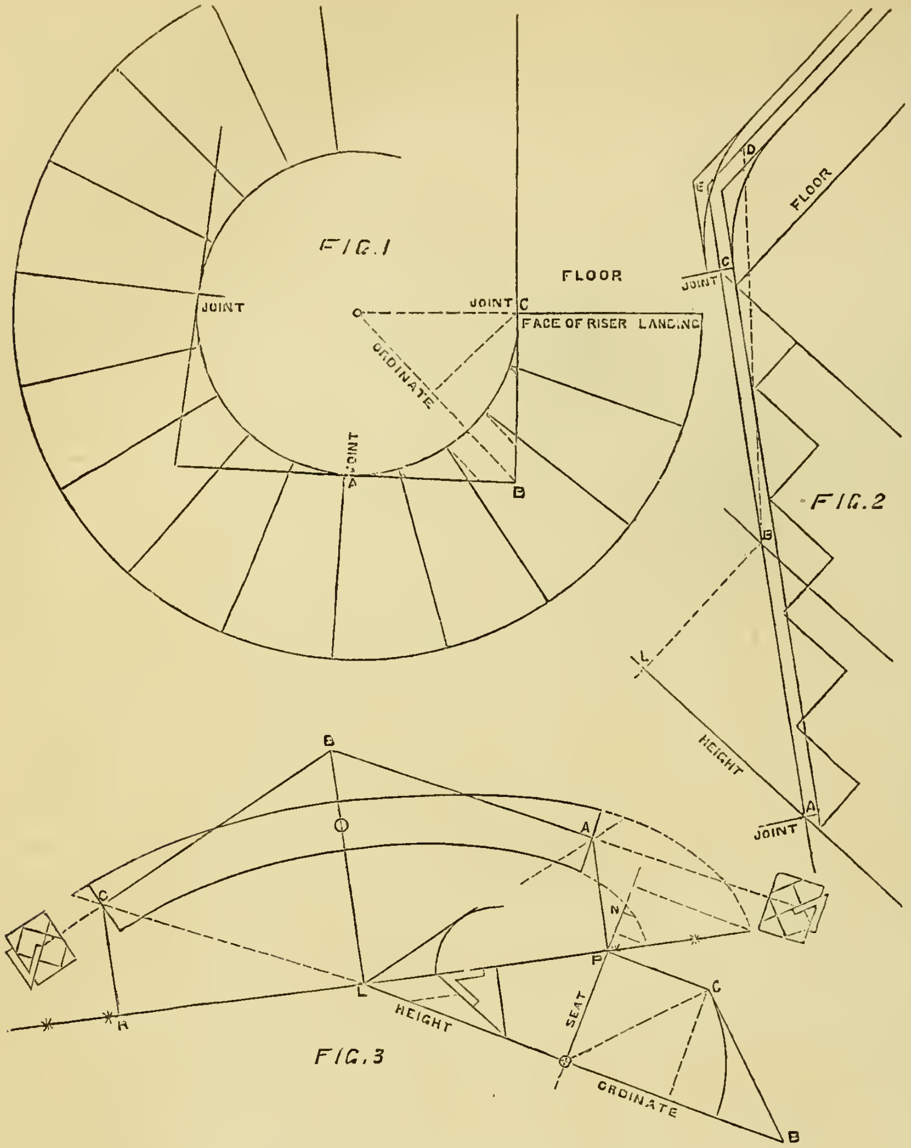
FIG. 1
FIG. 2
FIG. 3

NEW ELEMENTS OF HAND-RAILING.—PLATE XXXI.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 322.)

Plate 31.—The Wreath and Ramp at Landing of Circular Stairs.

THE rails for circular stairs require more than ordinary care in their construction.

If either joints or curves are incorrect, such errors may not be noticed until the work is fixed. Then the eye instantly detects a deformed and irregular curve; which is at once condemned as unworkmanlike, and unfit for use.

There are four different positions at the landings of circular stairs; the wreaths for which have been considered difficult. This system, however, makes the construction perfectly simple.

The first example is that shown at Fig. 1.

The straight rail on the floor has a ramp connecting with wreath landing. The joints are made so that each piece stands over five winders. The tangents are drawn through centre of joint A and C, and intersect at B. The pitch of rail being a straight line, makes the ordinate B O.

It matters not what angle the tangents make, a line drawn from their intersection to centre of plan is always ordinate. That is to say, when the pitches are equal—as in this case they are.

Draw lines from intersection of winders and centre of rail parallel with ordinate, cutting tangents.

Unfold A, B, C, and position of winders on tangents, as shown at Fig. 2. Let under-side of rail rest on risers A and C. Set off half its thickness. Then set off under-side of rail above floor, say six inches. Assuming short balusters on winders 2 - 2. Then the centre of rake and level rail intersects at E. This forms the ramp. Its curve could be improved by changing the pitch to B D.

In that case a separate mould would have to be made. Let the present position be considered as fixed.

Find half the height of wreath between A and C by squaring over B L, which gives L A. We are now ready to draw the mould. Its construction is shown at Fig. 3.

Commence by drawing a straight line in any direction; say that marked "ordinate and height." Take any point; say O. Square over seat. Let O, B, C equal corresponding letters on plan. Draw C P parallel with ordinate. Let O L, the height, equal that of A L on the right. Join P L extended. Make L R equal L P. Square over the lines. Let P A and R C equal P C. Make L B equal O B. Join A, B, C. These lines, to be correct, must equal the pitches at Fig. 2.

Next, find length of elliptic curves by extending the seat.

Let O N equal O C. Set off on each side of N half width of rail. Then draw parallel with ordinate, cutting the pitch.

Next, let L O, on line L B, equal O C. Set off on each side of O half the width of rail. This done, strike mould with either trammel, straightedge, or string. The last, of course, preferred, because the quickest. The application of this mould is: Let bevel lines, shown on square sections, be marked on both surfaces of stuff, and square with the joints. Then lay the mould on, and have A B and B C stand over those on surface of stuff.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

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SKETCH OF DESIGN FOR NEW COURTS OF JUSTICE.

LAST week we gave a perspective of the sketch furnished by Mr. Street for the new Courts of Justice contemplated to be erected on the Thames Embankment, and this week we give, for the benefit of the admirers of Mr. Street's architecture and drawings (and their name is legion), a portion of the sketch enlarged. Next week, or the week following, we shall give a photo-litho of Mr. Street's drawing of the proposed restoration of Christ Church Cathedral, Dublin.

THE FORTHCOMING CONFERENCE OF ARCHITECTS.

UNDER the auspices of the Royal Institute of British Architects, as we have previously announced, a General Conference of Architects will commence at the Rooms of the Institute on Monday, the 22nd inst., for the purpose of discussing questions of Professional Practice and Education, Archæology and Art, Construction and Science.

The opening meeting will take place at 2 p.m. on Monday, the 22nd of May, and will be followed by other meetings on the 23rd and 25th, when the proceedings will terminate with a public dinner, to which non-professional guests will be invited. All Members of the Institute will have the right of attending the meetings. Other practising architects (British or foreign) who may desire to attend are requested to apply at once for cards of admission to Mr. C. L. Eastlake, Secretary of the Institute. Each architectural society in the United Kingdom is invited to send a delegate to represent it officially at the Conference.

During the Conference an Exhibition will be held of architectural designs and drawings of a practical and geometrical character, *e. g.*, Plans, Elevations, Sections, &c. (unframed). Architects who may be willing to contribute such works are requested to forward lists specifying the number, size, and subjects of the drawings offered, which should be sent, when possible, in portfolios. Perspective views will be inadmissible.

The time occupied by the Conference is proposed to be allotted as follows:—

1st Day, Monday, 22nd May, 2 p.m.:—General opening meeting: address by Mr. Thomas H. Wyatt, President of the Institute. 8 p.m.:—Ordinary general meeting of the Institute: paper by F. C. Penrose, M.A., Fellow, "On the Decoration of S. Paul's."

2nd day, Tuesday, 23rd May, 2 p.m.: Sectional meeting: Professional practice and education; 8 p.m.: Sectional meeting: Archæology and art.

3rd day, Thursday, 25th May, 2 p.m.: Sectional meeting: Construction and science; 6·30 p.m. Public dinner at the Freemasons' Tavern. The length of each meeting will be limited as nearly as possible to two hours and a half.

Two Fellows and one Associate of the Institute are appointed to act as Hon. Secretaries to superintend the arrangements necessary for each subject or section, viz.:—Professional Practice and Education, E. I'Anson, V.P., and T. Roger Smith, Fellows, and R. P. Spiers, Associate; Archæology and Art, Wm. Burges and E. W. Godwin, F.S.A., Fellows, and Thos. Wells, Associate; Construction and Science, Charles Barry and Professor Kerr, Fellows, and E. W. Tarn, M.A., Associate; Exhibition of Practical Drawings, C. C. Nelson, F.S.A., and J. Norton, Fellows, and J. Donglass Mathews, Associate; Arrangements for Public Dinner, Horace Jones and O. Hansard, Fellows, and Arthur Cates, Associate.

Communications respecting papers to be read, or of subjects to be brought forward for discussion, should be addressed to the Hon. Secretaries of the special department for which they are intended, at 9, Conduit-street, Hanover-square, W.

Cards for the dinner will be supplied to members of the Institute and other gentlemen attending the Conference, on payment of one guinea to Mr. C. L. Eastlake. Sec. R.I.B..A., at 9, Conduit-street, Hanover-square. Applications for these cards must be made not later than Monday, the 15th of May.

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ZINC WATER TANKS.

THE *Lyon Medical* contains an article, by M. Zinrek, who has examined water which had long been kept in such tanks. He has found that the water dissolves so much the more zinc as it contains more chlorides, such, for example, as the chloride of sodium. The water also takes up larger quantities of zinc in proportion to the length of contact. Boiling does not, however, precipitate the zinc from water charged with the metal. A sample of the former was tried, in which the chlorides were in small proportion, but which had been a long time in a zinc tank. As much as fifteen grains of zinc was found in each quart. To prevent this state of things, the author advises the zinc tanks to be coated inside with an oil-paint, the bases of the paint being ochre or asphalte. No minium, ceruse, or carbonate of zinc should, however, be used. Fifteen grains in a quart seem an enormous proportion, nor does the author say whether he found the actual metal or a salt of oxide of zinc.

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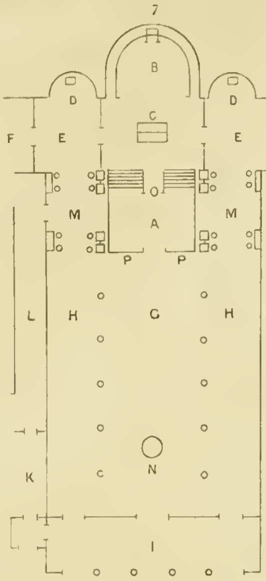

PLAN OF
EARLY BASILICAN CHURCH.

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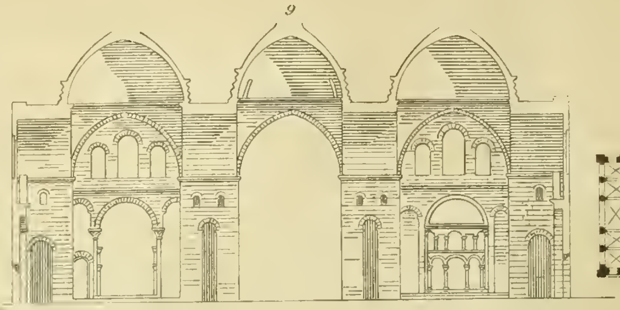

SECTION OF S. FRONT, PERIGUEUX.

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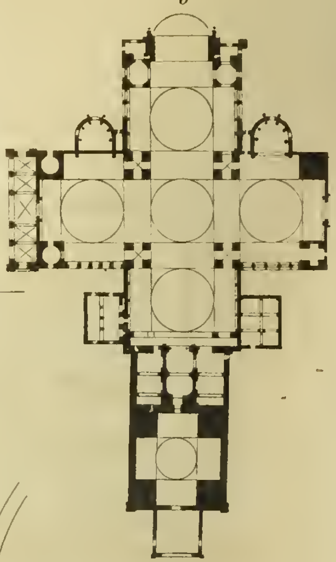

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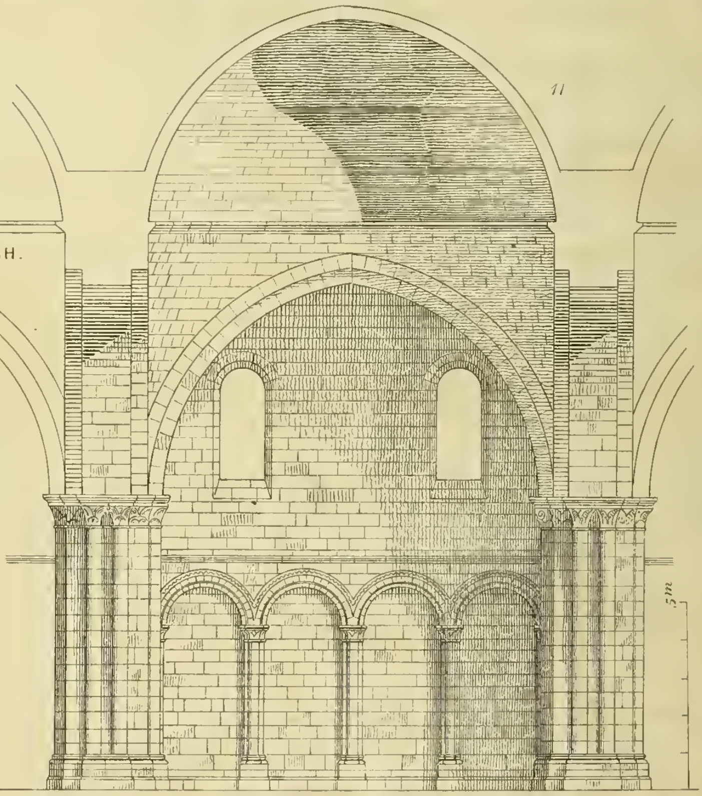

FONTEVRAULT, SECTION.

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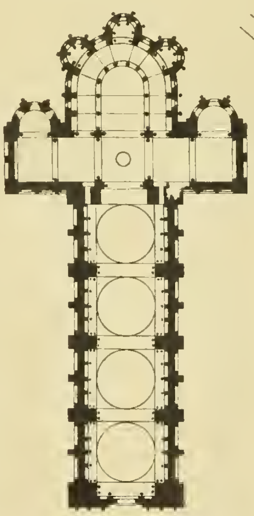

FONTEVRAULT, PLAN.

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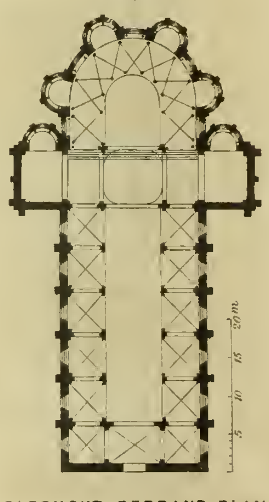

CLERMONT-FERRAND, PLAN.

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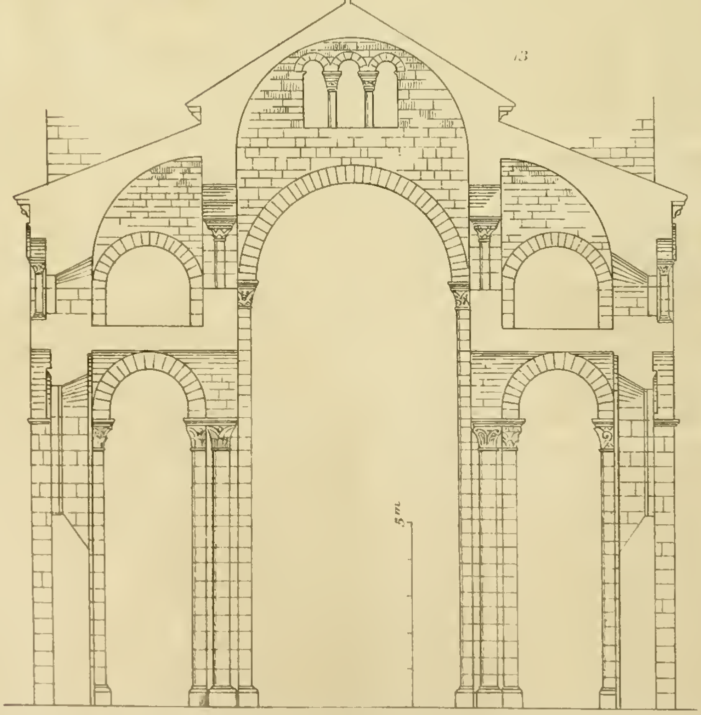
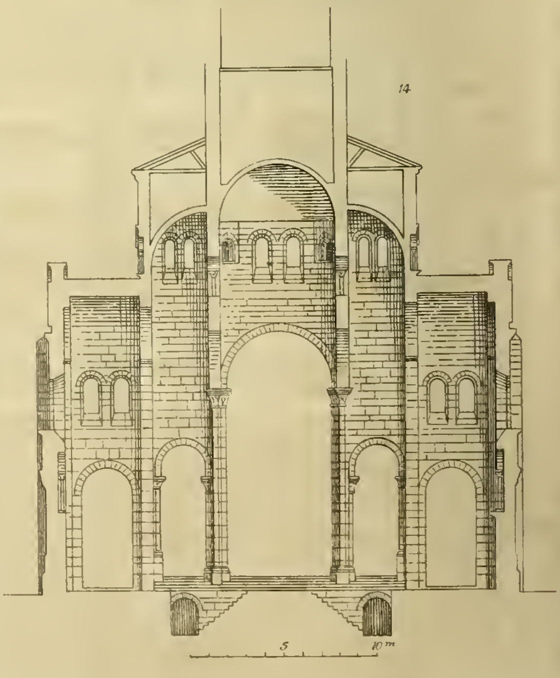


CLERMONT-FERRAND, SECTION THROUGH NAVE.

14



CLERMONT-FERRAND, SECTION THROUGH TRANSEPT.

Printed by Whiteman & Bass.

PLANS & SECTIONS OF CHURCHES.
FROM VIOLLET-LE-DUC'S 'DICTIONNAIRE RAISONNE L'ARCHITECTURE'.

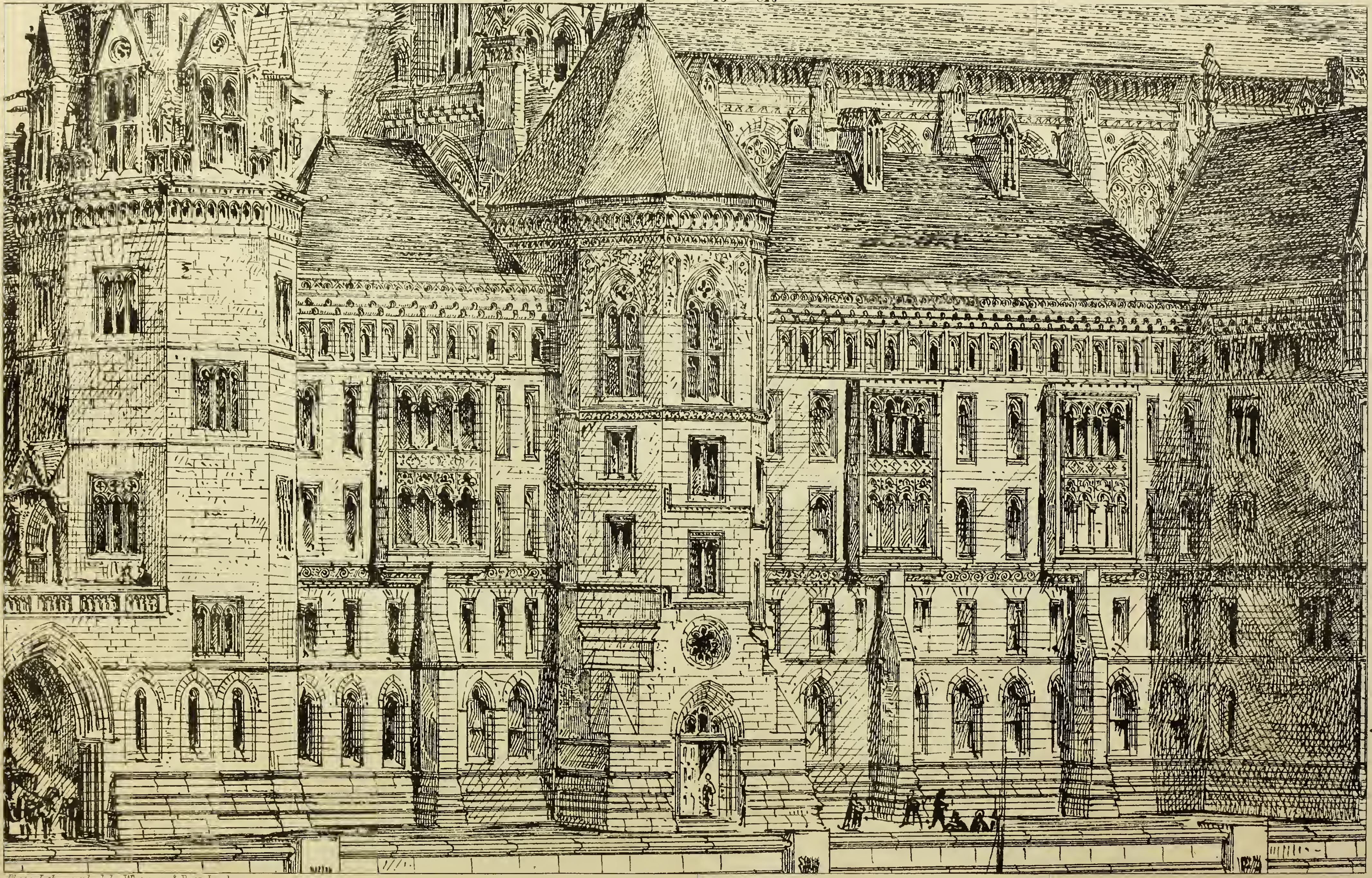


Photo-Lithographed by Whiteman & Bass London

PORTION OF SKETCH OF DESIGN FOR NEW COURTS OF JUSTICE AS PROPOSED ON THE THAMES EMBANKMENT.

THE LONDON INTERNATIONAL EXHIBITION OF 1871.

THE mention of an international exhibition conjures up in the mind at once the idea of a vast building of glass and iron, giving a grand internal vista of multifarious objects, gay in decoration, and filled with a noisy, moving crowd of people. Those who come to the present Exhibition with any such ideas will certainly be wofully disappointed. Many will probably ask, when they arrive at the place, where the Exhibition Building is. The present and permanent building for future exhibitions consists of two low narrow brick erections, flanking the east and west sides of the Horticultural Gardens, awkwardly connected at their northern ends with the Conservatory and the Albert Hall. The arrangement, as may at once be seen, is a very inconvenient one, it being just as though part of a collection was in Pall Mall and the other in Piccadilly. The length of the circuit, the break in the southern extremities, and the necessary amount of staircase, is out of all proportion in fatigue to the pleasure or profit gained. As to the architectural department in the gallery of the Albert Hall at an altitude of fifty-four feet, but that it is the only place where the general public can hear the music, it would probably be never visited at all. Those who do come will think more of the music than of the pictures. So utterly exhausted were the inquiring visitors who gained this height on Monday that scores of ladies and gentlemen sat about on the floor, other accommodation not having been provided. The Hall is a gigantic maze: its doors, corridors, and staircases are so numerous and so similar that it causes general bewilderment and universal vexation.

If the external appearance of the Exhibition Building creates disappointment, most certainly the contents will to those who expect much. In such exhibitions we expect, as a matter of course, novelty—in art, manufactures, and science the latest new thing. But here certainly half, if not the major part, of the works are old—previously exhibited, and well known. In the architectural department but very few of the drawings are new; some of them are very old friends, seen at many an exhibition over and over again; whilst the gallery of English oil pictures gives one the idea of last year's Royal Academy. Some pictures I remember in the last International Exhibition of 1862. The collection of china is the most complete and effective department, but here also we recognise old acquaintances. So all through. Certainly this may claim to be considered an exceptional year, but one cannot but feel surprised at there being so little that is fresh. Except to introduce new works, and making otherwise obscure merit known, what is the use or need of such exhibitions? It would have been far better for its prestige if the opening had been delayed till next year. Great credit is taken by those who have the management for the exclusive character, as they say, of this exhibition, nothing being admitted but of the highest excellence. Yet it would be difficult to detect this principle by the works themselves: there may not be anything present positively bad, but as certainly there is naught of the very highest quality. Nothing much above mediocrity has as yet been elicited. There is nothing in this Exhibition but can be beaten by similar objects in the Museum on the other side of the road. Sundry objects of cabinet work I should like to have spoken of, but as they were not labelled it is useless to mention them on the present occasion. Some cabinets and other costly articles of furniture show taste and fancy, but are almost too fastidious in their decoration by colour and varied materials. Messrs. Elkington, whose noted fine art works always furnish a treat, exhibit but little. It unfortunately happened that a grand and exquisitely-beautiful work they have in hand, by M. Morel-Ladeuil, could not be completed in time. It will probably be a chief object of attraction next year.

The present position of many things is odd, if permanent. For instance, a very elaborate font and cover, by Forsyth, in the open corridor of the garden; Belgian marble chimney-pieces in the upper conservatory corridor; and the Indian jewellery in the lobby of the old garden entrance. In the aforesaid garden corridor is a good collection of the well-known manufactures of the Messrs. Doulton.

I had hoped to have seen in the architectural collection good geometrical French drawings such as were in the last Paris International Exhibition, but such there are not. The foreign drawings present are not remarkable, and the English ones, of course, are of the highly-coloured quasi-landscape kind now in vogue. It would be an excellent rule in future exhibitions here, to admit only geometrical drawings, as being more strictly fitting and more instructive. The most prominent exhibitor is Mr. Waterhouse, displaying the picturesque and powerful style of drawing for which he is famous, and for the which he justly deserves credit, he being one of the few men who can do his own work. One of his designs is for the Natural History Museum, to be erected south of the Horticultural Gardens. One wonders why the carefully eliminated design of Captain Fowke should have been set on one side after acceptance. His design was much admired; and although the new one is somewhat similar in style, yet it is certainly not so good. The terminations to the towers are hideous, and would, if erected, excite endless ridicule. The erection of this museum will complete the scheme which, judging from one of his speeches, the late Prince Consort seems to have had in view, and which, as a sort of memorial to him, has for years been quietly and perseveringly carried forward. It may be that the expenditure of such vast sums of money on this favoured locality will appear to many as extravagant "hero worship" and mere waste; with the museum intended, the whole sum will probably amount to more than £1,000,000, but without such ruling motive, we should probably have had nothing at all, and as long as architecture gets patronage, and art generally is popularised, good, at any rate, results.

The Exhibition building, plain as it is, with no ornament towards the road—as it is said it will at no distant time be shut in by other buildings—and with but little towards the garden, has yet, it seems, cost, with fittings, £100,000! Many will probably wonder how.

To rid us of the reproach that we cannot in this country manage a State pageant was, it seems, the intention on Monday by a spectacle of unusual character. Alas! it but proved the rule. The ascents and descents, the tortuous winding ways, and the ill-kept, narrow path, broke the line into fragments, destroyed all impressiveness, and caused a complete failure!

One matter in connection with the Exhibition it is but just to notice. The refreshment department has been entrusted to the well-known contractors, Messrs. Spiers & Pond, who have carried out their duties with their usual taste and efficiency. Unfortunately, whilst the interest of visitors culminates towards the northern extremity of the building, the southern end, cut off in a great measure from intercommunication, is deserted, and the dining-rooms in that part are not seen and are unknown. Of the multitude present on Monday, but few had the curiosity to penetrate to the extreme south. This seems to require a remedy. It was said that only with season tickets were there to be any admissions on Monday. This was a rule certainly largely departed from. Indeed, if but half the number of those present paid three guineas the result must have been a very handsome sum.

As regards the acoustic properties of the hall, there was no echo to be distinguished on Monday in the gallery, and it is to be hoped that the admitted defect may be effectually corrected. Whether the velarium (there appeared to be three vails) will have the effect is open to question. It shows wonderful hardihood in the designer, in the face of known objections to such shape, spending £200,000 on this amphitheatrical experiment. The truth seems to be that our knowledge is still insufficiently exact to enable us to design a music hall with certainty as to the result, our practice being simply empirical.

As regards the Albert Memorial, *par excellence*, I noticed that the connecting bars at impost, which have lately created such animadversion, are now removed. As great care was taken in the construction by the use of girders to bring the superincumbent weight perpendicularly on the angle pier, and employment of ties from pier to pier, to resist any possible thrust of the merely ornamental arches, there is probably but little danger. Inasmuch, however, as an arch can never be said to be at rest, there must always be a certain uncertainty about it.

P. E. M.

SWEDISH GRANITE.

ALL building stones may be classified, roughly speaking, under one of two heads—namely, those that are suitable for foundations, and those that are adapted for face work. We (*Engineer*) have just received a specimen of granite from the Malmön granite quarries in Sweden, which is stated to be capable of being used for both purposes. It is now well known that from the North, which formerly sent us only the rough timber, we can obtain ready-made door and window jambs, frames, sills, and other finished specimens of carpenters' and joiners' work. It seems now that the same advantages are to be obtained in stonework. The Malmön granite can be delivered ready dressed in blocks of different sizes at any of our ports on the east coast at a price less than that at which the native stone can be supplied. With respect to the stone itself, which is a grey granite, it is of rather a fine grain, and, in the absence of any finished specimen, we are inclined to class it under the former of the heads we have alluded to. It would yield in hardness to the Aberdeen and the Guernsey granite, and therefore would not be so well suited for paving sets, but would answer extremely well for backings and foundations. It is true that the price of labour in Sweden is much less than in this country, but at the same time the cost of transport is proportionately augmented, so that what is gained in one way is lost in another. The blocks of the Malmön granite range in dimensions for "stretchers" from 3ft. 6in. to 5ft. by 2ft. 3in. by 2ft. 3in., and for headers the measurement is 3ft. 6in. by 2ft. 3in. The price depends upon the amount of dressing that the stone is required to receive before being shipped for this country.

DAMP DWELLINGS.[*]

RESUMING this subject where we left it[†]—namely, at the consideration of the materials for walls—it will be obvious that, as all external walls are exposed to more or less wet weather, our efforts will be most usefully directed to preventing the moisture from entering at the outer face of the wall; or, if we cannot prevent its penetrating the surface, then we must apply ourselves to hindering its passage quite through the wall.

The use of materials which have a very hard face, such as the best sorts of building-stone or bricks, especially machine-made bricks, will, if the joints of the work are well "pointed," *i. e.*, filled with mortar, keep out the moisture effectually. The best class of cement used on the face of a wall does the same thing; and when bricks of a porous quality are of necessity used, it is often the best safeguard to "render" the walls with Portland cement. It is important to notice that not only the face but the top of every wall must be protected. It is to keep the wet from soaking into the body of the wall that every window has a sill of hard stone, or some other impervious material, and that all parapets or other unprotected walls require a coping; and the top surface of all cornices or chimney-caps, or even strings and other projections, is, in the best class of buildings, protected with lead or cement for the same purpose.

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[*] By Mr. T. Roger Smith, in the *Food Journal.*

[†] See Building News, Vol. XIX., p. 347.

Where the materials are not naturally impervious, many attempts have been made to arrive at some mode of rendering them so. Professor Church, Messrs. Ransome, and recently Messrs. Gay, may be named as the most prominent among those who have proposed chemical means for accomplishing the induration of building materials with more or less success. It would be out of place as yet to try to fix the degree of success which has attended their efforts; whatever any or all of them may prove to have accomplished, no one of them has yet gained universal acceptance, or superseded the two applications in which practical masons have long put faith—viz., a wash of soap and alum and a coating of oil. Perhaps oil, when applied thoroughly and in dry weather, may be said to be as yet the only application which extensive experience has pronounced successful, though the soap and alum-wash has been frequently found useful.

If the surface is once passed, the thicker the wall the longer it is in being thoroughly soaked, and the less wet will penetrate it from short rains; but almost the thickest solid wall will sooner or later give passage to continuous moisture if its outer face be once penetrated; and experience has constantly shown that a hollow wall is drier than a solid wall of the same thickness. When building in stone, it is especially desirable to have an inner lining of brick, with a clear space of from two to four inches between it and the wall, and as few solid points of contact between the two as possible.

The employment of two materials—such as stone with a backing of brick, or soft brick with a facing of harder brick, or of flints, or even of rough-cast—often produces a tolerably dry wall, without much expenditure of hard material; and Taylor's facing-bricks, which are little more than tiles each with a ledge, but which can be employed to face a wall built of concrete with perfect success so far as dryness goes, are a good instance of the application of this principle; so are the tiles used in Sussex and some other counties to form the face of external timber framings; but in exposed situations, or with only ordinary or bad materials at command, hollow walls may be recommended as the best precaution hitherto invented. In some cases, contact between the outer and inner wall can be almost entirely prevented by connecting them together with iron cramps. When this is not done, the greatest care must be taken to reduce the points of connection to a minimum, to employ hard materials at those points, and even to break the continuity of the communication by leaving those bricks which are used as ties clear at both ends. It is almost needless to add that the cavity must be kept clear of mortar and rubbish. A less perfect mode of preventing annoyance from damp than by building hollow walls, but a favourite expedient, is to "batten" the inner face of the wall; that is to say, to place strips of wood against it, cover them with laths, and plaster on the lathing. By this means, the inner face next the room is usually preserved from the actual appearance of moisture; but as it is possible that the whole wall behind the battening, if solid, may be moist all the time, this is an inferior method to the hollow wall. For very exposed situations, or very porous materials, a combination of the two, *i.e.*, a hollow wall, battened in addition, is to be recommended.

Where moisture is at all likely to enter from the ground on which a house stands, it is most desirable to cut off the foot of the wall from all communication with the upper part by a "damp course," composed either of slate laid in cement, or of some sort of asphalte or coal-tar, or of vitrified tiles made for the purpose; and this should go quite through the external walls (in damp soils it should be used also in internal walls), below the level of the lowest floor. Where earth comes against the walls to any extent, it is desirable to have either an open area, or what is called a "dry area," to prevent its actually touching the walls; and in wet soils an intercepting drain outside that area will also be of service.

In good buildings, it is often customary to cover the whole surface of the earth under all floors with a layer of concrete or asphalte or some other hard body; and this, no doubt, promotes the dryness of the building to a great extent. Solid floors, *i.e.*, floors of stone, tile, or brick, should always be laid on a pretty thick layer of concrete or dry rubbish, not direct on the earth.

The precautions which can be taken in building in the first instance point to what may be done in cases where a dwelling-house, actually erected, proves damp. Supposing that no unfair amount of water falls on any part of the walls—a matter to which we shall return presently—and that damp shows itself from ordinary rainfall, or from the ground, the precautions to take in the hope of curing the evil are the same which we have already indicated as preventives. If the circumstances permit it, a coating of Portland cement will more often than not keep out the effects of weather. Where this cannot be used throughout, it is often applied with good effect to chimney-stacks. These are much exposed, and often absorb much wet, and let it soak down. At any rate, the tops of all walls, cornices and chimneys can always be so protected. Where cement is inappropriate or inadmissible, as is often the case, the mortar-joints must all be looked to, and the "pointing," *i.e.*, filling up with mortar, or preferably with cement, put in thorough repair, so as to make the face of the wall as even as possible; and in many instances oiling, or otherwise indurating the whole face of the wall, may be tried in addition.

If these remedies are not successful, or not appropriate, as it is impossible to form a hollow in a wall already built, the only course left that can be applied to the wall itself with any promise of success is to batten the inner face as before described; but this is an affair that interferes so much with all the joinery and other internal fittings that it is rarely practicable to carry out such a measure. Forming a dry area round the walls is frequently a serviceable remedy where the lower part of a house is damp, and draining the site is often of very great service. So, in many cases, is the taking up the lowest floor, removing a foot or two of earth, covering the fresh surface with concrete and relaying the floor, leaving good ventilating channels for the air-space so formed.

A very fertile source of dampness is "drip." Even the small amount of rain-water falling on a window, and which, after draining down, finally drips from the window-sill, has a great tendency to render the wall immediately below that sill damp; for whenever the wind blows towards the wall, every drop is likely to be blown against its surface. This, by the bye, shows the folly of our making the wall immediately under window-sills thinner than elsewhere, which it is customary to do for convenience sake.

The drip from a roof not furnished with a gutter, or from a verandah that is too shallow, or, worst of all, from a defective rain-water pipe, is, however, larger in quantity and more exposed to wind than that from a simple window-sill; and this source of dampness often remains for a long time undetected, as the place where the water falls against the wall will often be distant from that where it escapes.

As a general rule, it may be laid down that there is no auxiliary so powerful in diminishing the amount of such moisture as cannot be actually shut out from any part of a building, as a free circulation of air. It is to be remembered that the atmosphere is almost always in such a state that when it comes into contact with free moisture it will absorb some of it. Let, therefore, openings communicating with the cavities and vacant spaces of a house be freely provided. The hollow space in a roof, the space between floor and ceiling, and the hollow under a floor, should all enjoy a free circulation of air. It is even desirable, in building hollow walls, to attempt to promote a circulation of air in the cavity, and in all these cases it should be remembered that *two* openings are requisite to each hollow in order to give much hope of a current or change of air. Where there is no ventilation under the lowest floor of a house, the joists and timbers will soon begin to decay. This may be accelerated by covering the floor with oilcloth or kamptulicon or similar non-porous coverings. Ivy or creepers against external walls, and even trees growing close to them, tend to promote moisture by cutting off the circulation of air.

The failure of any portion of the arrangements for water-supply or drainage will be pretty sure to lead to damp. As general rules, no drain should ever be permitted to pass under any part of a dwelling-house; and when this cannot be prevented, the drain should be so laid, without being covered up with earth, that every part of it which is under the floor of the house can be reached at once. The water-pipes, on the other hand, should be kept well within the house for warmth's sake, and, where they leave it, should be at a level of not less than 3ft. at the least below the surface, for protection against frost. Whenever practicable, water-pipes should be left where they can be seen and got at. Iron is preferable to lead for their material, and the arrangements should always include the means of shutting off water-supplies in very frosty weather.

It only remains to suggest to those persons who unfortunately find themselves in a damp house which they cannot leave, that they ought to use as many remedies as they can, rather than only one at a time; that, as far as possible, what is done should be done in dry weather: and that the repairs or remedies attempted should be carried out with good materials and labour, in the most thorough way possible, and under vigilant supervision. Damp is most insidious, finds its way in at very small and very out-of-the-way inlets, and when once established seems very loth to be disturbed. Those who build for themselves will, we hope, not overlook the very just importance of the simple precautions necessary to keep their houses dry; but we should be especially gratified if these observations induce some of our readers who rent houses to bestow some little pains in ascertaining, before they take a house, if these precautions have been attended to or not. It is wise to try to select a wet day for looking over a house, for if the day be fine, and the weather dry, damp spots as well as many other defects may be easily overlooked. Let the intending tenant look for the existence of damp-courses, dry areas, and ventilation under floors; let him avoid a ground floor that is not a little raised above the earth outside, unless he is sure there is a good cavity under it well ventilated. Bricks that are manifestly porous, or which change colour very much when rain falls, parapets with no copings, walls where the pointing is not thoroughly sound, eaves without gutters, and the like, are to be looked upon with great distrust; and an unsound roof or ill-arranged gutters (of which, by the bye, few non-professional persons can form a good opinion) ought to be looked upon with as much disfavour as a dining-room of the wrong shape, or a drawing-room that looks gloomy. In one word, in choosing a house in which a man intends himself and his family to live, he should look out for the indications of damp as pointing out the presence of one of the most serious enemies to the comfort, if not to the continuance, of their life, which he can have to encounter.

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YARMOUTH HARBOUR.

That part of this harbour known as "The Brush" is situated near the embouchure of the river, and forms a projection jutting into the stream of at least 30ft., while it runs from east to west about 225ft. Placed at one of the most important points of the navigation, this angular intrusion into the river has formed for ages a great obstruction, and the rapid decay of the work of late years, involving its absolute refrontal and reconstruction or entire removal, has, under the advice of the engineer, Mr. J. Cubitt, C.E., backed by the deputy-engineer, Mr. W. Teasdel, C.E., induced the Port and Haven Commissioners to adopt the latter alternative. Superintended by Mr. Teasdel, relays of men are daily engaged in effacing this long-standing disfigurement to the harbour. In carrying out the work, the utmost caution is requisite, and only portions can be removed at stated intervals, destruction and reconstruction being effected simultaneously. Piles of large dimensions and iron land-ties have been laid down, in order to prevent the quay from slipping outwards. Thousands of old piles have been uprooted; they are of English oak, and are, for the most part, rotten and honeycombed with worms. They appear to have been put in in the shape in which the trunks grew, and not squared up, as is the case with modern piles.

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THE ACOUSTIC QUALITIES OF ALBERT HALL.

Lieutenant-Colonel Scott, in a letter addressed to the *Times*, on the acoustic qualities of this hall, which have been very much discussed recently, says:—"It is clear, therefore, that the hall has certain excellences which commend it to musicians, and it is worthy of note that these excellences are chiefly such as it was feared the hall, from its large size, could not possibly possess.

"The question of echo, meaning by the word the repetition of a sound by reflection after an appreciable interval, need not detain me. The differences of opinion on this point are to be accounted for. Many improperly term 'echo' what they should call 'resonance.' In one or two places also there is still a sufficient concentration of the reflex waves of sound from the glass roof to produce a sensible repetition from very loud and sharp noises. This is noticeable along the major axis of the oval to the distance of two or three seats on either side of it. It is also audible, but to a less extent, at the seats adjoining and immediately over the orchestra. Such echoes are easily cured. The second velarium, added since the opening day, has done much; the steps I am now taking will do more; and, meanwhile, for every person who detects the echo fifty cannot do so, and, of those who hear it, not one in ten, judging from the reports I hear on all sides, is troubled by it.

"There is, however, another set of phenomena which merit some consideration. I mean that repetition or continuation of sounds which arises from setting up a vibration in bodies at a distance from the source of sound.

"In considering the mode in which the interior walls of the Hall, should be finished three courses were open to me, each one of which has advocates whose opinions on such a subject merited attention. The first course was to discard resonant materials as far as possible. Those who think that this is the right course argue that after the sound has reached the ear the sooner it is absorbed the better, and that any degree of resonance from the walls of the building is detrimental to musical effects. A second course was to finish the walls with hard, well-polished plaster, and to lay the floors with tiles. This is the opinion of one of the most distinguished organ builders of the day. A third course was to line the walls with a resonant material, and I decided on the plan of using wood, for the following reasons:—1. The buildings most remarkable for their acoustic properties have been all so finished. The celebrated theatre of Parma, Her Majesty's Theatre in the Haymarket, which was destroyed by fire, the Surrey Music Hall, which shared a similar fate, and the theatre of the Royal Institution, were all lined with wood. 2. It is a generally received opinion that a room sufficiently non-resonant for speaking is too dead for musical purposes, and that the resonance derived from wood is more beautiful than that obtained from other materials. 3. The correction of undue sonority by draping is a simple matter, but it would have been costly to have imparted resonance to a building deficient in this respect.

"Let me call the attention of musicians to the extent of the resonant material in the Hall, and remind them of a phenomenon which may assist them in determining how far the resonance should be toned down. The whole of the high wall behind the orchestra is of thin wood, carefully tongued together, with an air space between this wood lining and the brick wall. The whole of the upright wall of the picture gallery, with the exception of the pilasters which divide it into bays, is lined in a similar manner. The coving of the roof and that portion of the roof which is not of glass is also of wood tongued together.

"Now, it is a matter of common observation that musical sounds often set up a vibration in the soundboard of a piano, glass-drinking vessels, and similar resonant objects, and manifestly an interval must elapse between the actuating sound and the sympathetic response. Assume a sufficient distance between the sounding body and the responding instrument, and a sufficient intensity in the utterances of the former, and we may obtain an echo-like repetition of the original sound at an appreciable interval. The woodwork behind the orchestra of the Hall would give its response to sounds emanating from the position of the big drums in considerably less than 1-10th of a second for persons in front of the orchestra. This sounding board, therefore, could give no repetition of sound, but it very possibly intensifies the effects of loud musical instruments, such as drums and trumpets, more than the delicate notes of a violin, or of the human voice. The effect would vary, of course, with position. The woodwork of the picture gallery would commence its response, for a person in or close to the orchestra, in about the one-eighth part of a second, and the response would increase in intensity, probably, as the wave of sound reached bay after bay, up to nearly a quarter of a second. For persons in the gallery itself the resonance of its wood work would commence at once and gradually die away. The wood work of the ceiling would probably produce a somewhat similar, but, from the wood work being continuous, a more complicated effect. To a very large extent, however, this sounding-board is protected from the direct wave of sound from the orchestra by the interposition of the velarium. The resonant glass of the roof is similarly covered.

"It is clear that we have here an immense resonant surface which admits of being toned down to the point which musicians may wish by the simple expedient of draping, but here comes the difficulty."

Dr. C. J. B. Williams, in a letter to the *Times* on this subject, says:—"If the walls had been faced with a hard, smooth, dense material, such as stone, tile, or plaster, they would have so perfectly reflected the sound as to produce distinct echoes, which, retarded by distance and repeated so long after the original sound, would confuse the words of speakers, and musical notes out of time, and therefore out of tune, would follow. Confusion and discord would have been the necessary results. If the walls had been completely covered with a soft, flaccid material, like drapery, which damps or deadens sound by completely neutralising the vibrations, there would be neither echo nor resonance; but although loud notes might have been distinct enough, all weaker sounds would be as much lost as if they were made in the open air. A lining of thin, light wood will neither reflect the sound nor damp it, but will, in a measure, receive and participate in its vibrations, and thus increase the body of sound in its vicinity, without any sufficient retardation to injure time or tune. The general result will be to make the whole air of the amphitheatre, with its resounding wooden walls, vibrate in harmony or system with the leading notes of the orchestra, without any stray notes or echoes to cause confusion."

HALES OWEN ABBEY.

LAST week Mr. Holliday read a paper before the Archæological Section of the Birmingham and Midland Institute, on Hales Owen Abbey. After tracing its history back as far as 1102, he proceeded to describe the present appearance of the ruins. The character of the architecture of the church is exceedingly simple, and from what now remained it is pretty clear that the church has not been altered at any time, but continued until its destruction in very nearly the state in which it was originally built. The present remains are of 13th century date, with one exception—a portion of the south side of the choir having been built in the 14th century. From a conjectural plan of the church, it consists of a nave, north and south aisles, north and south transepts, and chapels east of the transepts. Mr. Holliday minutely described the probable character of the church with its principal features, and adjacent monastic building. With regard to the internal decorations of the church, he observed that it was the fashion now-a-days, in the restoration of churches, for architects to scrape off all the whitewash and plaster, under the impression that that was put on by the churchwardens in the last century; the fact, however, was that in the 13th, 14th, and 15th centuries churches were generally plastered inside, and he found evidences of the whole of the interior of Hales Owen Abbey having been plastered. Almost every piece of plaster found by him had upon it a narrow red line, but he discovered no traces of decorative painting on a large scale, nor anything like figure subjects. About two years ago, he happened to be looking over the ruins, and finding that fragments of paving tiles had frequently been found, and sometimes whole ones, by the permission of Lord Lyttelton he made several excavations, and discovered a number of broken tiles buried in a heap. Most of the subjects on the tiles were, however, obliterated. From the portions which remained, he found that they resembled a number of curious tiles discovered on the site of Chertsey Abbey in 1853. Mr. Holliday, who exhibited elaborate drawings of these tiles, most of which were perfect, explained that the figures they bore represented the romance of "Tristram," and remarked that it was strange that tiles used in a sacred edifice should illustrate secular subjects. There were no tiles equal to them in England, and they were probably made as early as 1277, and not later than 1298.

DORKING.

IT is as great a mistake to judge places as people by appearances. How often do we see a snug little village on the banks of a river, the smoke of the cottages curling above the trees, the neighbouring meadows smelling as sweet as they look, and think as we gaze on the scene that "if there is peace to be found in the world, a heart that is humble may meet with it here." Yet (as the *Pall Mall Gazette* says) such is not always the case. Take Dorking, for instance. If there is a pleasant-looking place, it is Dorking, and, moreover, it is associated in the minds of most people with fresh butter, pure milk, new-laid eggs, and chickens above the average. Yet the account given of it by Mr. James Dewdney, a corn-miller residing in the place, in his evidence before the Royal Sanitary Commission, is calculated to diminish rather than to enhance its attractions in the eyes of most people in their senses. In the first place the drainage seems to be slightly defective. "How is the town drained?" asks the Chairman. "It is not drained at all," replies Mr. Dewdney. We further learn from Mr. Dewdney that the water supply has been "very bad;" and certainly it does not seem to have been very good, for he states: "It is notorious that at one time the people of Dorking were drinking partly spring water and partly the brook water and sewage mixed." Under these circumstances it is not surprising to learn that the people at Dorking have suffered much from fever; they also appear to have suffered much from local authorities. "The vestry," says Mr. Dewdney, "is the local authority, but it cannot be used, and for this reason, that whenever we have a vestry called for the purpose of improving the state of the health of the town, we have a vast number of small proprietors of cottages who immediately go to their tenants and tell them: 'Oh, if you have this done, you will have your rents doubled.' The consequence is that whenever any good measure is proposed, those men come out to the vestry and outvote us, so that we really are powerless. There were two or three vestries for the purpose of draining the town, but we could not do anything."

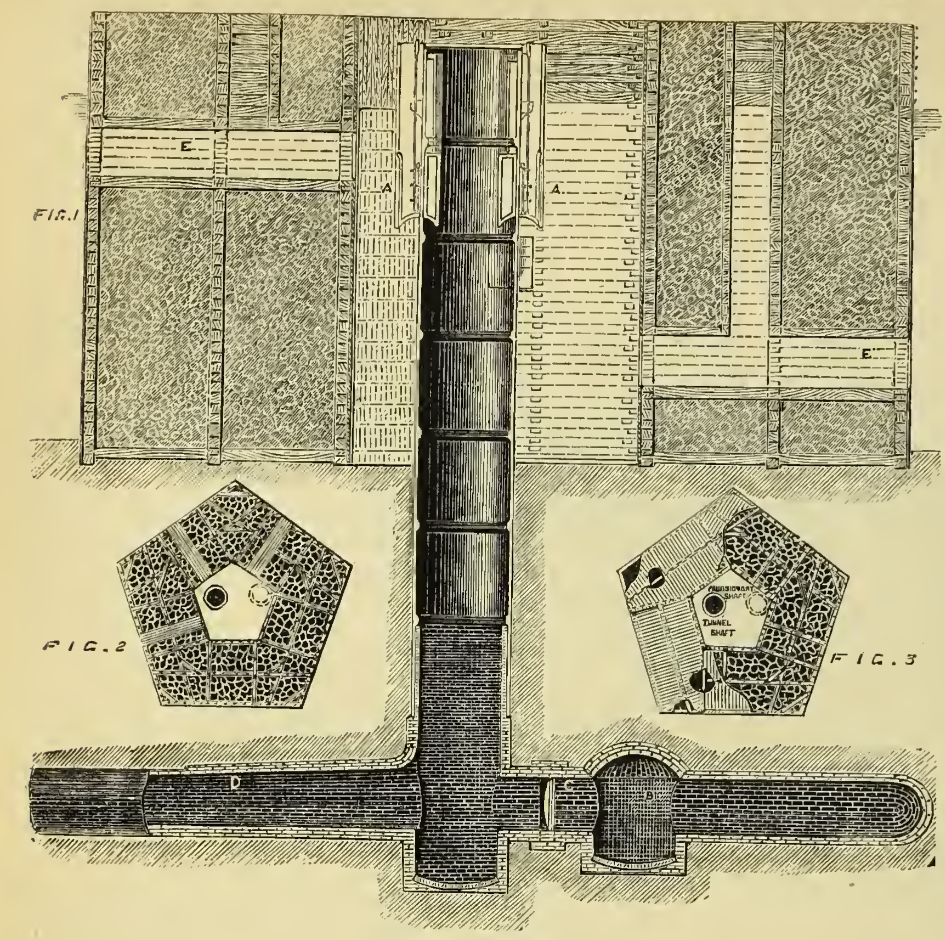
ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the annual general meeting of this Institute, held on Monday evening last, the President, Mr. T. H. Wyatt, in the chair, the report of the Council for the past official year (which we printed *in extenso* in the Building News for the 21st ult., p, 291), was unanimously adopted, subject to a few verbal amendments. The report briefly referred to several matters of professional interest—viz., the Voluntary Architectural Examination, for which a certificate is now issued to passed candidates; the question raised between Mr. E. M. Barry and Her Majesty's Office of Works; the new Metropolitan Buildings and Management Bill; the forthcoming General Conference of Architects (to be held at the Institute on the 22nd, 23rd, and 25th of this month); the prizes for 1871-72 offered to architectural students (recently supplemented by a liberal donation from Mr. H. W. Peek, M.P.); the general conditions of contract settled between the Institute and the London Builders' Society, together with the yearly statement as to finance and extent of membership, which appeared to be satisfactory. The meeting having then proceeded to ballot for the Council, hon. officers, and secretary for the ensuing year of office, the following gentlemen were re-elected:—As President—Mr. Thomas H. Wyatt; as Vice-Presidents—Messrs. Edward I'Anson and Alfred Waterhouse; as Ordinary Members of Council—Messrs. A. W. Blomfield, M.A., W. Burges, H. Currey, C. Fowler, E. W. Godwin, F.S.A., J. H. Hakewill, Professor Kerr, R. L. Roumieu, J. P. St. Aubyn, and J. Fowler (Louth). The following gentlemen were elected to fill up vacancies occasioned by retirement in rota or resignation:—As Vice-President—Mr. Horace Jones (the City Architect); as Ordinary Members of Council—Messrs. G. Aitchison, B.A., H. Dawson, R. J. Withers, W. M. Fawcett, M.A. (Cambridge), and E. Sharpe, M.A. (Lancaster); as Hon. Secretary for Foreign Correspondence, Mr. F. P. Cockerell; and as Secretary, Mr. Charles L. Eastlake. Messrs. Harry Oliver (Fellow) and J. Douglass Matthews (Associate) were elected auditors for the ensuing year.

CHICAGO WATERWORKS.

CHICAGO, as our readers are doubtless aware, is one of the most important cities of the United States, and has been called the "emporium of the West." Within the past few years its population has increased enormously, and whilst in 1858 the daily average consumption of water was less than 3,000,000 gallons, in 1865 the amount required was not less than 6,500,000 gallons. In view of this state of things, and with the probability of a still further augmentation of the demand, measures were taken to supply the city with a larger quantity of water, for the accomplishment of which its position on the shore of Lake Michigan offered great advantages. Through the kindness of an American correspondent, we are enabled to give a description of the works, with an illustration of probably the most important feature in connection with them.

To avoid the risk of the water being contaminated by the outflow of the Chicago river, it was decided to drive a tunnel under the bed of the lake for a distance of two miles from the shore, and though this plan was at first opposed, it was ultimately carried out with complete success. The horizontal diameter of this tunnel is 5ft., and the vertical, two inches greater, this size being fixed upon as capable of supplying 50 gallons a day per head to 1,000,000 inhabitants. The work was commenced by sinking a cast-iron land-shaft, made in sections 10ft. long, by 9ft. internal diameter, and 1½in. thick; these being united by flanges bolted together, and with rust joints. No difficulty of any moment was experienced after reaching the clay, and the bottom of the shaft having been lined with masonry, the tunnel was commenced, which consists for the first 20ft. of three shells of brickwork, each 4in. thick, the remainder being lined with two shells, set in cement joints half an inch thick. The upper arch was built on a ribbed centre of boiler iron, the lower by templates or



CHICAGO WATERWORKS.

plattens in the usual manner. Sufficient room for the brickwork only was excavated, the last four or five top courses being driven into well tempered cement mortar previously placed in the cavity. The greatest difficulty met with in driving the tunnel, was from inflammable and explosive gas; but the miners learning to detect the proximity of the cavities containing it, bored small holes and allowed it to burn itself out.

The peculiarity of the work, however, and probably its most important feature, was the "crib" to protect the lake-shaft or inlet from masses of ice, from storms and passing vessels. This crib, sectional illustrations of which we give, is a sort of pentagonal breakwater, 40ft. in height, and the sides of which each measure 58ft. The inner portion, or well, has sides of 22ft., parallel with the outer ones, the thickness between outer and inner faces of the crib being 25ft. This construction was built on shore, on a flooring of 12in. white pine; the outer and inner faces and the wall between them being also built of the same timber, except 10ft. of the upper portion of the outside, which, to better withstand the action of the ice, was constructed of white oak. The angles of the outer and middle walls were secured by brace walls, and cross-ties passing through the middle wall were dovetailed into the outer and inner walls, being placed 9ft. apart horizontally, and 1ft. vertically. The floor was laid on ground timbers, and these were secured to the first two courses of wall timbers by bolts with large washers, the other timbers being secured by pointed bolts 34in. long, driven in slanting in opposite directions.

Openings 4ft. wide by 5ft. high were made in the crib, and provided with sliding shutters, so that water could be drawn from the bottom, middle, or top of the lake; these openings, with the wells extending from them to the top, were timbered round in the same manner as the other portions. The whole of the outside surfaces of the outer and inner walls were sheathed with 2in. white pine, placed vertically and spiked on; the upper portions of the outside were, however, sheathed with 3in. oak, and the corners protected by angle-iron 1in. thick, and extending 2ft. each way. Every possible precaution was taken to secure strength, and the crib when completed was launched and towed out to its position in the lake, where, after a few mishaps, it was deposited in its appointed place and filled with stones.

The crib being securely settled, the sinking of the lake shaft was immediately proceeded with in a similar manner to that adopted with the shore shaft, but an extension of the tunnel and a provisionary shaft were constructed as shown in Fig. 1, in view of future requirements. The tunnelling was then carried on from the lake end, and when the two parties of miners met the faces of the masonry were only 7½in out of lining with one another. The total length of the tunnel is 2 miles 7ft.; but a shore tunnel connecting the land-shaft with the pumping wells was also constructed, but not at so great a depth as the lake tunnel, the bottom of which is 72ft. below ordinary water level. Midway between the landshaft and the pumping-wells is situated the "gate-chamber," constructed of brick 3ft. thick, and divided into five compartments, with walls 20in. thick, in which are sliding gates to shut off the water from the pumps which are not at work. The "gates," like those of the crib and inlet shafts, are operated by screws worked from above.

The crib has a lighthouse and sleeping rooms for the attendants built on it, and its success is now fairly established, as on several occasions broken ice has lodged on its south side, forming banks several hundred feet long, and extending from the bottom of the lake to ten feet above the surface. The quality of the water is reported as generally excellent; and since the opening no indications of injury to the tunnel or the crib have been observed, and no difficulties of any importance experienced, but as the population is still rapidly increasing, an additional tunnel will have to be constructed, and extra pumps erected. In our engraving, Fig. 1 is a vertical section of the crib and inlet shaft; A A being the sliding shutters for the admission of the water; B, the provisionary shaft; C, the bulkhead; D, the main tunnel; and E E, two of the openings to the lake. Figs. 2 and 3 are horizontal sections of the crib, Fig. 2 being composed of parts of sections to show the "inlets." — *English Mechanic and World of Science.*

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Improved Mortice Lock.—Our attention has been called to a new improvement in mortice locks, manufactured by Messrs. Reuben Burkitt & Co., Wolverhampton. It is simple in its construction. The action is arranged for the points of contact of the latch crank and the follower rolling over each other, and being a perfectly balanced motion, with great strength, all friction is avoided. In the better quality the metal is a composition, an improvement on brass, considerably hardened by the mixtures introduced

ARCHITECTURAL SOCIETIES.

Architectural Institute of Scotland.—On Wednesday week, in the Society of Arts Hall, Edinburgh, Sir Henry Dryden read a paper entitled "Some Account of the Church of S. Magnus, in Orkney," to the members of the Architectural Institute of Scotland. Sir Henry said the Church of S. Magnus was certainly the finest architectural structure in Scotland; and, though many differed with him, he considered it superior as a record of architectural art to any similar building in England. Historically, he thought no building could be found in Great Britain so interesting; and this was no doubt owing to the circumstance that it was first begun by Norsemen, and that its history carried us back to the days when those bold seamen and warriors first came into this country. Sir Henry proceeded to recount the events which led to the erection of the church, and with the aid of numerous drawings traced the progress of development of the grand old pile from 1138, the year in which the building is said to have been commenced, till the seventeenth century. At the close of his description, Sir Henry alluded to the styles of architecture exhibited in Furness Abbey, Cartmel Church, and Dunfermline Cathedral, all of which were founded in the twelfth century, and contrasted them with those of S. Magnus. A short discussion followed, and at the close of the proceedings Sir Henry was awarded a vote of thanks for his interesting paper.

Livrpool Architectural and Archæological Society.—The annual meeting of the present session was held at the Royal Institution on Wednesday evening last. The business for the evening was the delivery of students' prizes, the reception of the treasurer's statement and annual report, and the election of officers and council for the ensuing session, together with the president's closing address.

Royal Institute of the Architects of Ireland.—An ordinary general meeting of the Institute was held on the evening of Thursday, the 20th ult. The President, James H. Owen, Esq., M.A., occupied the chair. The Assistant-Secretary having read the minutes of the former meeting, also a communication from the Royal Institute of British Architects relative to the Conference to be hold in London, said it was his painful duty to record the removal by death of three members of their body—viz., Messrs. William G. Murray and C. A. Sherry, Fellows; and Mr. Thomas Collot, student. The President read a paper entitled "Sundry Notes," upon which there was an animated discussion, and for which he received a cordial vote of thanks. Messrs. Charles Geoghegan, Fellow, and G. C. Henderson, Associate, acted as scrutineers for the ballot of Mr. W. M. Mitchell as Fellow; Rev. J. W. Hardman, LL.D., as Honorary Fellow; and W. B. Law as Associate; all of whom were declared duly elected.

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SCHOOL OF ART.

Yarmouth.—An exhibition of the works executed by the students of the Yarmouth School of Art during the past half-year was held in Yarmouth a few days ago in the class-rooms of the school, South Quay. The number of works exhibited was not large, but the majority of them were well-executed. The whole of the drawings, with the class studies, numbering 442 altogether, have been forwarded to the Science and Art Department, South Kensington, to enter into competition with those from the other schools of art in the United Kingdom.

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PARLIAMENTARY NOTES.

The Encroachments in Epping Forest.—Mr Cowper-Temple, on Friday last, seconded by Mr. Holms, moved an address calling on the Government to take measures, in accordance with the address to the Crown carried last year, for preserving as an open space, for purposes of health and recreation, those parts of Epping Forest which have not been enclosed with the assent of the Crown or by legal authority. After expatiating on the sylvan beauties of the Forest, and the pleasure it gave to hundreds of people at the East-end of London, he criticised severely the action of the Government, particularly in the sale of the forestal rights and their proposed legislation of last year. Nearly £16,000 had been obtained for these forestal rights, and this, he contended, ought to be voted back for purchasing the rights of the lords of the manor and for other expenses, the remainder to be furnished by the City of London, the Metropolitan Board of Works, and the adjoining parishes.—Sir H. Selwin-Ibbetson pointed out that the lords of the manor had proprietary rights, which could not be bought out, he calculated, under £200,000. In their name he advocated some satisfactory arrangement which would respect their rights and keep open a large portion of the forest.—Mr. A. Johnson urged that the rights of the public should be maintained, and Mr. Beresford Hope, as a metropolitan ratepayer, called for a broad and generous treatment of the question, and pointed out that, while at the West-end people had all the parks, Kew, Richmond, &c., open to them, at the East there were only Victoria Park and Epping Forest. He suggested to Mr. Lowe that to preserve the forest from further enclosure would be an appropriate compensation for the fright he had recently given the match makers.—Mr. Alderman Lawrence and Mr. Samuda also supported the motion, the former sharply attacking the administration of the Woods and Forests, and the latter expressing his opinion that the preventing of further encroachment would serve all purposes.—The Chancellor of the Exchequer denied that this domain was the peculiar property of the people of the East-end, but admitted that the Crown ought to do all in its power to secure them the enjoyment of it as long as it did not violate its duty to the remainder of Her Majesty's subjects. He asserted that the Government by the Bill of last year had done more in this direction than Mr. Cowper-Temple's motion would, for while he only asked for a sum of £15,000 odd to be paid back, the Bill would have secured for ever 600 acres, which had been valued at £100 per acre. The rest of the country would hardly consent to bear the expense of recreation grounds which London could well afford to pay for. It was impossible for him to assent to a motion which called for the preservation of 3,500 acres.—Mr. Gladstone also spoke against the motion, which he professed not to be able to understand, and offered on the part of the Government either to reintroduce the Bill of last year or to surrender the forestal rights of the Crown to the Metropolitan Board of Works.—Mr. Cowper-Temple replied that this offer had been made in 1863, and declined by the Board of Works.—Mr. V. Harcourt was of opinion that the suggested arrangement was most unsatisfactory, and maintained that, if the forestal rights of the Crown had been exercised in the interests of the Crown, these enclosures never could have been made; and Mr. Kinnaird suggested that the matter should be left in the hands of Mr. Ayrton, who, before he was in office, held the soundest popular views about it. After some further remarks from Mr. Gladstone, Mr. Anderson, and Sir H. Hoare, the House divided, and the Government was beaten by a majority of 101—197 to 96.

Street Tramways.—Sir H. Hoare asked the President of the Board of Trade on Monday whether his attention had been called to a letter which appeared in the *Times* of the 7th of April, containing the opinion of the editor of the *New York Evening Post*, that if proper precautions had been taken when charters were granted in that city it would now be in receipt of sufficient revenue from them to pay all expenses of paving, lighting, cleansing, sewerage, &c.; and whether, seeing that no independent evidence had been laid before the House as to the conditions upon which concessions were now granted in the United States, any steps had been taken, or would be taken, to secure evidence upon that important point before further powers were granted for the construction of street tramways in the metropolis.—Mr. Chichester Fortescue said the position of the Board of Trade was this:—An Act of last Session gave power to local authorities to construct tramways if they chose, and, if they did not choose, to allow companies to do so. In no case had the local authorities elected to construct tramways; on the contrary, they had given their assent under the Act to the schemes promoted by companies. The Metropolitan Board of Works had declined to embark upon the construction of them. Under these circumstances he felt bound, acting in the spirit of the Act of last year, to place before Parliament the schemes which had received the sanction of the local authorities. They would be embodied in provisional orders, and their fate would then depend upon the House and its committees.

The New Forest Bill.—Mr. Hambro asked the Secretary to the Treasury whether it was his intention to proceed with the New Forest Bill; and if so, whether he would name a day, or probable day, on which he would take the second reading of that bill.—Mr. Baxter said that in consequence of the pressure of public business it was not his intention to proceed with the New Forest Bill this session. He would take that opportunity of stating, in reference to the proposed motion of the hon. member for Brighton, that it was not intended to make any fresh enclosures in the New Forest, pending legislation, and that trees would only be felled for the effecting of necessary repairs, the necessary opening of plantations, and the satisfaction of the rights of feuholders.

The Inhabited House Duty.—Mr. Eykyn asked the Chancellor of the Exchequer whether, taking into consideration the statement made to the hon. member for Nottingham, he would direct the Commissioners of Inland Revenue to discontinue the collection of the inhabited house duty for "offices or business premises used only as such," and direct the return of all amounts that had been collected in error.—The Chancellor of the Exchequer replied that the description of premises referred to in the question of the hon. gentleman did not come within the exemptions of the Act of 1869; and he could not, therefore, make the required order.

The Albert Memorial.—On Thursday week, in answer to Mr. Hardcastle, Mr. Ayrton stated that the iron bars which had been complained of in the Albert Memorial were about to be removed, as the structure was now completely secure.

Kensington Gardens.—In reply to Lord Elcho, Mr. Gladstone stated that Kensington Gardens were under the control of the First Commissioner of Works, and that no other authority was responsible for their management; such being the case, he should leave his right hon. friend to answer the other questions of the noble lord.—Mr. Ayrton then proceeded to explain that last session he had made a proposal to Parliament to throw a portion of Hyde Park into Kensington Gardens. Parliament voted the money, and the plans were submitted to the House. Everything that had been done since had been done by his authority, and for it he was wholly responsible. The plan submitted contained only that portion of the park which was affected by the proposed alteration. If the noble lord wanted any further information, he could find it in any good map of London. An account of the number of trees cut down would be furnished whenever the House thought proper to consider the subject. On being further pressed by Lord Elcho, the right hon. gentleman stated that the object was to carry a walk from the Albert Memorial to the centre of Kensington Gardens, and that the last plan was finally settled in December last.

The Chelsea Embankment.—Dr. Brewer stated, in answer to Mr. H. Lewis, that the Chelsea Embankment was to be constructed of granite, and that that material was used because it was the most durable and best suited for the purpose.

LEGAL INTELLIGENCE.

Legality of a Reredos.—Chancellor Phillpot gave judgment, at Exeter, on Saturday, in the Consistorial Court, in the Lynton reredos case. Mr. Riddell, the people's churchwarden at Lynton, prays for a faculty against Mr. Baker, the vicar's churchwarden, and also another churchwarden, called Taylor, to remove figures of Our Lord on the cross, with the Virgin on one side, and S. John on the other, in the reredos of Lynton Church. Two points were raised—first, whether the reredos was included in the faculty granted for alterations; and secondly, whether the figures were legal. The judge held that the reredos was not included in the faculty, and that the figures were illegal. A plain cross was legal, a crucifix was not; and the addition of figures to the crucifix to make it into a group did not make it legal. The removal of the figures was ordered, and the Ten Commandments were directed to be set up in their place; costs to follow the order. On the application of Mr. Phillimore, Mr. Baker's counsel, the last part of the order about the commandments was withdrawn, Mr. Riddell's counsel agreeing. Notice of appeal was, of course, given, and issue of the removal faculty was stayed for a month.

WATER SUPPLY AND SANITARY MATTERS.

Utilisation of Thames Sewage.—The Native Guano Company have accepted the tender of Mr. Webster, the contractor for the Thames Embankment, for the construction of their new works adjacent to the pumping station at Crossness, near Erith, on the Plumstead Marshes, which were some time ago inaugurated by the Prince of Wales. Operations have been commenced for the erection of the works, which will consist of five enormous wrought iron tanks, sufficiently large to contain each day's pumping, drying sheds, warehouses, &c., and the company, which for some time past has been successfully engaged in the utilisation of the sewage of the towns of Warwick and Leamington, are very sanguine as to the the results of the undertaking.

Pollution of Cardiganshire Rivers.—On Tuesday week Dr. Frankland and Mr. J. C. Morton, two of the Rivers Pollution Commissioners, commenced an inspection of the basins of the rivers Rheidol and Ystwyth and their tributaries. These rivers are alleged to have been rendered impure by the contamination of water running from mines in the upper portion of Cardiganshire.

Ely.—Mr. J. Bailey Denton has, at the request of the Local Board of Health, reported on the best means of utilising the sewage and improving the sanitary condition of the city of Ely. He recommends that the sewage should be conveyed, partly by gravitation and partly by pumping, to the Turbotsey farm, and there to be used for irrigation. He estimates the cost of executing the necessary works at £7,980, exclusive of easements and engineering expenses.

New Reservoir for Stockport.—The Stockport District Waterworks Company have just let some large contracts for the Bollinhurst reservoir and covered conduit at Lyme Park. When the work is completed the company will have a storage of 160 days' supply, independent of what the streams would yield and in addition to the 1,000,000 gallons a day which the Manchester Corporation Waterworks are required to furnish.

The S. James's, Westminster, Vestry have resolved to erect at once two refuges in Regent-street, one opposite Air-street and one opposite New Burlington-street.

Building Intelligence.

CHURCHES AND CHAPELS.

Batheaston.—On Tuesday week a new Congregational chapel was opened. The plan is a simple parallelogram, consisting of five bays besides the chancel. The entire length of the building inside is 61ft. 6in., its width 30ft. 6in., the height from floor to apex of roof 27ft., and the height from level of road to top turret 62ft. The chapel is arranged to accommodate 325 persons; the chief entrance doors are in the front. It is built in the Gothic style, of an early date. The architects of the chapel were Messrs. Wilson & Wilcox.

Liverpool.—Christ Church, Linnet-lane, was consecrated last week. The church is built according to plans supplied by Messrs. Culshaw & Sumners, of Liverpool. Both externally and internally the structure is of Stourton stone in two tints, with a slight intermixture of red stone in bands. The style of architecture is Early Decorated, freely treated. The plan consists of nave, north and south aisles, chancel, vestry, and tower, with east, north, and south-west porches. In the interior, the nave is 32ft. 8in. wide by 105ft. 8in. long, divided from the aisles by six arches and clerestory, supported upon five moulded York stone shafts, with moulded bases and carved capitals. The chancel is 30ft. long by 28ft. wide, separated from the nave by a richly moulded arch springing from stone shafts and sculptured corbels. The sittings are of pitch pine, with covered bench ends, and will seat 800 persons. The lectern was supplied by Hart & Co., of London.

Moccas.—The parish church of Moccas, said to be the most ancient in the county of Hereford, was reopened by the Bishop of the diocese on Tuesday week. The church, though of small dimensions, is an exceedingly chaste specimen of Early Norman architecture, consisting of nave, chancel, and apse. The architect engaged was Mr. Gilbert Scott, jun. The work includes the reseating of the church with open seats of oak, the removal of the whitewash ceiling, and the substitution for it in the nave and chancel of a flat pannelled roof of oak, chastely carved—the roof of the apse being also of oak, though, of course, not flat. Both chancel and apse have, too, been raised to their original pitch. The tracery of the chancel windows—which, though the style of architecture is in other respects pure Norman, are in the Decorated style—has likewise been restored; a new and substantially-built oak porch takes the place of the old porch; the ivy by which the exterior of the building was formerly encased has been removed, and the walls pointed in parts and carefully restored, blocks of travertine, of which the church is built, being, where necessary, neatly let in. The execution of the restoration has been carried out by Mr. Franklin, contractor, of Deddington, near Oxford.

Newcastle-on-Tyne.—The corner-stone of a new United Presbyterian church and schools, now in the course of erection in Westmoreland-road, Newcastle-on-Tyne, was laid on the 26th ult. Accommodation is provided for 800 persons in the church, and for 300 children in the schools, the former being entered through a projecting porch by stone terrace steps raised about 5ft. from the ground; and the latter, owing to the gradients of the side streets, is approached on the level at the opposite end. The style of architecture adopted is Early Gothic, and the character of the walling is what is locally called "sneck walling," with ashlar dressings. The total cost will be between four and five thousand pounds. Mr. Thomas Oliver, of Newcastle, is the architect; Messrs. N. & R. Reed the contractors, and Mr. R. Davidson the clerk of the works.

S. Alban's Abbey.—At a recent meeting to take into consideration the present condition of S. Alban's Abbey, a report from Mr. G. Scott, R.A., was read, stating, among other particulars, that the central tower of the Abbey was in great danger, and that many other parts of the fabric required immediate attention. It was proposed and carried unanimously—"That the reparation of the Abbey be undertaken as far possible in accordance with Mr. Scott's report; that a subscription list be opened; subscriptions to be spread over five years, if so desired." Those present were formed into a committee, with power to add to their number. The Earl of Verulam consented to act as treasurer, and Mr. H. J. Toulmin and the Rev. W. J. Lawrance, rector of S. Alban's, were appointed secretaries. It is estimated by Mr. Scott that the sum of £42,650 is required for the reparation of the Abbey (exclusive of all internal fittings, restorations of screens, tombs, &c.), of which £26,048 is considered by him to be absolutely "necessary work." This does not include architect's commission and other contingencies. The committee trust that funds may be raised in the county on such a scale as may enable them to undertake this great work, and to appeal with confidence to the country at large to assist in preserving one of its most interesting national monuments. It is proposed to hold a public meeting in London early in the ensuing summer.

S. Andrew's, Holborn.—Considerable alterations are proposed to be made at S. Andrew's Church, Holborn. The completion of the Viaduct has brought the roadway some 60ft. nearer the church than it originally was, and the noise of the traffic now interrupts the services. It is therefore deemed necessary to alter the windows, and to make them of a rather more ecclesiastical character, and to follow the Byzantine style of two-light window, with trefoliated circle round the top for ventilation. The organ is to be removed from the west gallery, where it is now placed, and conceals the oldest piece of the church architecture remaining of the ancient building. This is a fine archway, and one which withstood the fire which destroyed the remaining portion of the old edifice. The whole of the alterations contemplated to be carried out is estimated to cost about £5,000.

Splottlands.—On Wednesday week the new Congregational chapel at Splottlands, Cardiff, was opened for divine worship. The chapel is described as being in the "Victorian" style of architecture, and is 42ft. long inside, 34ft. wide, and 28ft. 6in. high, accommodating 500 persons, including sittings in the galleries. Mr. J. Price is the builder, the architect being Mr. J. Follett Fawckner, of the firm of Messrs. W. G. Habershon and Pite. The contract was taken for the sum of £1,440.

BUILDINGS.

Brighton Library and Museum.—A report of the Brighton Pavilion Committee will be laid before the Town Council at their next meeting, on the plans submitted to it by the Borough Surveyor (Mr. Lockwood) for the appropriation of that part of the pavilion known as the Eastern Court for a public library and museum. Mr Lockwood proposes to construct on the ground floor an entrance hall from Church-street, two library and committee rooms, and a central gallery of 115ft. by 30ft., to be used as a public reading-room or for art collections, or a picture gallery, with, on the east side of this gallery, a subscription reading-room and library, a reference library, and a lavatory, and, on the west side, three rooms, suitable either for library or museum purposes. On the upper floor there will be seven more rooms, including a lecture and museum room, with cross galleries. Altogether they occupy an area of 10,500 superficial feet on the ground floor. The estimated expense is about £6,000.

Newcastle-on-Tyne.—The Mayor of Newcastle recently opened the new and commodious schools which have been erected in connection with the Bath-lane Church from the designs of Mr. Thomas Oliver, F.R.I.B.A., of Newcastle (who was also the architect of the church). The style is Gothic, the principal elevation, facing Locke-street, presenting a large central block, flanked by gables at the east and west ends. The building is lighted by large three-light windows in the centre blocks, and by four-light windows in the gables. There is a spacious porch at the north-west angle, and entrance to the building is also obtained by means of two side doors at the east-end of the building. The centre-block is surmounted by a bell-turret, rising about 34ft. above the level of the ridge. The principal schoolroom measures 85ft. by 55ft., and is divided into centre and sides by cast-iron columns, used as supports for the roof, the portion of the roof over the sides being open, and the roof over the centre waggon-headed in form. Class-rooms are provided at the east-end of the building. These class-rooms are separated from each other by means of movable screens, and a spacious room 45ft long by 15ft. broad can be obtained by moving the screens. Accommodation is provided for the education of 600 children. Mr. C. Lowry and Messrs. R. and N. Reed were the contractors, and Mr. Henry Andrews acted as clerk of the works.

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London Association of Foremen Engineers and Draughtsmen.—At the monthly meeting of members to take place to-morrow (at eight p.m.), at the City Terminus Hotel, Mr. W. Lloyd Wise will read a paper on "The Patent Laws." The subject is one of vital interest to skilled workmen and artificers generally, and it will no doubt be practically treated and intelligently discussed on this occasion. It may be stated that non-members will be readily admitted on application. Mr. Joseph Newton, Royal Mint (president of the association), will occupy the chair.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—W. H., W. R. C., W. P., O. O., R. W. & Co., T. E., R. R., C. A. B., J. B., E. E. E., S. Brors, W. S. & Co., R. C., E. W. D., Art Student, S. O., J. H., J. N., J. H. E.

H. L. and W. W.—Next week.

J. R. Wight.—Sketch returned.

Fuller and Lavers.—Photos to hand. Can't promise to insert.

J. A.—The next of Albert Dürer will be given in a week or two. It will be the Apocalypse, kindly lent by Mr. W. Burges.

Correspondence.

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STRENGTH OF PORTLAND CEMENT.

To the Editor of the Building News.

Sir,—I observe in your remarks upon Mr. Grant's paper that his experiments were made on the tensile strength only of cement. I do not dispute that this form of making the experiment is the best, but, having occasion lately to consider how and to what effect this material could be applied in the making of footways in a district where flag-stones are expensive, I procured samples from several makers of cement, and tested their strength crosswise, and perhaps it may not be uninteresting to you to know the results. I thought that for my purpose this form of testing the strength might be more practically useful than that of direct cohesion, besides being more easy of application. The results were that, reducing the co-efficients of strength to the form of $w = \frac{c\,b\,d^2}{l}$, where w expresses the breaking weight in lbs. applied at the centre of the bar, b the breadth, and d the depth in inches, l the length between the bearings in feet, and c the co-efficient sought, $c = 36$ in the strongest specimen, and 33 in the weakest, excluding some specimens of inferior manufacture. The number of experiments with specimens of a good sort was about seven or eight.—I am, &c.,

C. S.

ARCHITECTS' CHARGES.

Sir,—"An Ill-used Architect" has been fortunate in obtaining prominence for his case in your columns, and an advocate in "F.R.I.B.A.," who could hardly be more zealous were the complaint his own. The time would also be opportune for the General Conference shortly to be held, did novelty present itself. The honorary solicitor of the Institute might be moved to pronounce any relevant bearings of the law of contracts could any contingency not already provided for be said to occur; but no such peculiarity appears. "F.R.I.B.A." may be willing to point out the additional power against his client an architect acquires by the incidental mention of his name, or a reference to his drawings, in a deed of contract between the owner and builder. That circumstantial document commonly provides against a change of architects as a matter of ordinary probability that need not and must not vitiate the bargain between the real parties thereto. Next let me inquire at what period an architect becomes entitled to claim five per cent., and upon what amount? The contract has a proviso for extras and omissions which the owner is at liberty to order; and whether the outlay be increased or diminished, it is upon the modified result, and not upon the original amount, that the commission is chargeable. The Institute scale directs that "The commission is to be charged upon the whole value of the work executed, with the addition of two and a half per cent. upon any omissions." Here, then, is a rule perspicuously laid down by the body of which "F.R.I.B.A." is presumably a member—a rule that leaves the owner free to determine the contract at any moment, that guards the architect against illiberality, and protects the public from grasping, hard, exacting demands, but too-well calculated to scare clients, and destroy the confidence that may, I humbly presume to assert, be reposed in the general mass of the profession.—I am, &c.,

Thomas Morris.

Sir,—"F. R. I. B. A.'s" uncalled-for flourish respecting "principle," "professional credit," and all that sort of thing, "to the contrary notwithstanding," is apparently a shrewd and decent fellow, and, in the main, undeniably correct. I was once somewhat amused by an actor in a well-known farce, whose great point was the constant iteration of the anything but agreeable remark: "I'm in the law; ain't you frightened?" And for the life of me, I cannot disabuse myself of crediting the existence of a connecting link between that worthy disciple of the sock and buskin and our reputed "F. R. I. B. A." Speaking equitably, and admitting that equity and law are anything but near relations, I still maintain that the architect who seeks to enforce a claim for the payment of services never rendered, simply—very simply—commits a suicidal action. It won't pay either architect or client to appeal to the "glorious uncertainty" over every trifle.

I fail to see the absurdity of the situation insinuated by our forensic friend, and with the following parallel beg to terminate. He says "'F.' very absurdly asks 'If the architect had received the full amount, what would have re-imbursed him who might some day have to complete the work? Architects are not immortal,'" and then very naïvely proceeds to advertise himself thus:—"Architects are not immortal, to be sure, and if a brother architect were to die in the course of his work, I should be quite ready to take up the business, and complete it for a *fair proportion* of the 5 per cent."

Now if the executors of the original architect had already obtained the full 5 per cent. for carrying out a portion only of the work, what would he say, if so employed, at the corresponding fairness of being "left out in the cold" as regards remuneration? Wouldn't he be fairly entitled to undisputed custody and wear of the absurdity medal?—I am, &c.,

F.

BUILDERS v. ARCHITECTS AND CLIENTS.

Sir,—In reply to "Surveyor," the contractor's charges may be "in strict accordance with the ordinary trade prices," and still may be in excess of what he is fairly entitled to. It is just possible that he is endeavouring to obtain an advanced price for the extra work; a very common practice, even in the face of a deterrent clause.

Again, the deductions may be "large and numerous," and still far below what they should be.

To reiterate (repeat) and simplify:—"Dry facts oft-times receive qualification (abatement, diminution, modification, restriction, limitation), and even liquefaction (the act of melting), by the addition of aquosity (wateriness) from a deep and oft-quoted source" (the well of truth); which being translated (explained) or interpreted (expounded) for the behoof (profit, benefit, advantage) of "Surveyor," who evidently belongs to the "call a spade a spade" fraternity (brotherhood, class), and, moreover, cannot discern objects not in close proximity to his nasal organ, may be read thus:—The statements don't read like truth, and no one can form an honest opinion thereon, unless they hear both sides of the question; or sounds like a lie and requires corroboration (strengthening or confirming); or again, seems apocryphal (of uncertain authority or credit, false, fictitious) what says the opposition?—or yet again, "T'es a' wunner, let t'other cove spake." "Surveyor," from his line of argument, is "owt" but a total abstinence man, or he wouldn't "give out" that "liquefaction" and "aquosity" have been too much for any one. Is it possible to have even "too much of a good thing?"

Being an advocate of the happy medium, I take the liberty, *in extremis*, of strongly recommending "Surveyor" to invest (lay out money) in a portable edition of the works of any lexicographer (the author of a lexicon or dictionary).—I am, &c.,

Surveyor No. 2.

ANTIQUITY OF PIPES.

Sir,—With respect to the Taunton pipe, I would say to "St. Mungo" that the question is not the invention of smoking, but whether the article found is, as stated, a tobacco pipe. If it is, the date is evidently false. If the pipe is a clay, as we are left to suppose, it is another proof of its not being so old, for not until the practice of smoking became general is it likely there was any manufacture in that material. The carving he refers to at Cawdor Castle I think very untrustworthy. In the first place, the writer of the Highland Handbook is not likely to be very learned in antiquities. He assuredly errs in asserting the thing represented in the year 1510 to be a tobacco pipe. And if the date of the chimney-piece is beyond question, the nature of the carving is not. I expect the pipe was intended for a musical one—monkeys in Mediæval carvings being often represented with musical instruments,—and that the similarity to the cutty pipe is owing either to the rudeness of the carving, injury from decay, or, what is not at all unlikely, comparatively recent tampering.

I am, &c., P. E. M.

Intercommunication.

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QUESTIONS.

[2217.]—**Soil Pipes.**—The opinion of practical men on the following question is solicited. Are there any objections to connecting two water-closets, on different stories, to one stack of soil-pipe? Do any inconveniences arise from such use?—A. Z.

[2218.]—**"Water Service of Dwellings."**—In the article under this head in the Building News of 28th April, it was observed: "When a soil-pipe is carried on the outside of a building it should be covered by an earthen pipe of large diameter, which will be an effectual prevention against frost." The soil-pipe is filled with gas from the sewer, and nothing else. Is this precaution necessary? Many country houses have the soil-pipes running up two and three stories, and, beyond casing them at bottom to preserve the lead from injury, there seems little necessity for a precaution that may be prudent, but must be very unsightly. Will the writer of the article alluded to favour us with any better reason for the act?—A. Z.

[2219.]—**"Waste Pipe of Bath."**—Does the writer see any objection to discharging the waste into the upper arm of a cast-lead siphon trap? The bath-room is, in general, placed on the same level as the water-closet; the trap offers a convenient outlet. The pan would be inconvenient; and this method offers the advantage of a trap regularly flushed with water.—A. Z.

[2220.]—**Foul Air in Soil Pipes.**—To prevent the escape of foul gas into the house, the best method that suggests itself is to connect a ¾ or 1in. lead pipe to the highest point of the soil-pipe, and lead the same to the ridge, as far distant from windows and chimney openings as possible. The opinion of your readers is sought, for these matters are worthy of ventilation. —A. Z.

[2221.]—**Common Rights.**—Can any reader of "Intercommunication" give an authentic answer to the following query? Before commons were enclosed and common rights commuted, could a cottager, not legally settled in the parish, acquire, by term of residence, a right to use the town land? And, if so, of how many years?—Trustee.

[2222.]—**Engravings.**—Can any of your readers inform me how to remove spots of whitewash from an engraving? I find that, by scraping carefully with a knife, I get all the white off, but a yellowish stain still remains.

REPLIES.

[2168.]—**Strength of Girders.**—Assuming that there are no holes in the girders in question, all we have to do to calculate their strength as wrought girders is to employ another "constant." The principle of the calculation is identical, no matter what material may be used. For the flanged girders the rule, when the proper figures are put in, will be—

$$W = \frac{9 \times 12 \times 75}{20 \times 12} = \frac{9 \times 15}{4} = 33{\cdot}25 \text{ tons;}$$

or nearly three times as great as a cast-iron girder. Again, for the double beam, we have—

$$W = \frac{0{\cdot}75 \times 144 \times 1{\cdot}35}{20} = 8{\cdot}29 \text{ tons;}$$

or, multiplying by two, the whole beam will bear a breaking weight in the centre of 16·58 tons, instead of 9·72 tons in the former case.—Check.

[2184].—**The Cymagraph.**—For the information of "A. L.," I may say that I took particulars of the cymagraph exhibited by Mr. Sharpe during the excursion of the Architectural Association last summer, and on my return had one of the instruments made by a young mechanic here. The cost was 10s. 6d., exclusive of the small drawing-board required as a base of operations. If "A. L." will send me his address, I will forward him that of my artisan friend, who will doubtless make his cymagraph on the same terms he made mine, or I will post "A. L." the working drawing, and he can get one made for himself.—W. Larner Sugden, Leek.

[2197.]—**Mounting Tracings.**—The mounting of a large tracing, say the size of a sheet of "double elephant," is rather a ticklish affair, and requires a considerable share of both practice and dexterity to make a satisfactory job of it. Tracings are generally mounted on stout paper; but also, sometimes, on calico or linen. The great secret is to have the tracing thoroughly well and uniformly wetted. As "C." appears to be in trouble, I may inform him that he will find a roller made of, or rather covered with, some soft material, very useful in getting rid of the air bubbles and rendering the paper smooth. The roller used by paper-hangers is the sort of thing. As a friendly "wrinkle," I may tell "C." that if he really wants to make a first-rate job of mounting either drawings or tracings, let him mount them on silk. I have mounted one or two maps for private use in that manner, and there is nothing that can come near them.—Hint.

[2199.]—**Engineering Establishment, Chatham.**—The sheets and text-books you allude to are of a kind rarely or ever published, except in the form of "Transactions of the Royal Engineers," and can be seen at any large library. Of course an odd copy may be procured now and then, but the volumes are never in the market. Try at Spon's, Charing-cross.—Viator.

[2200.]—**Quantity of Water per Head.**—Mr. Bateman, one of our first hydraulic engineers, puts the allowance of water per head in large towns at thirty gallons; but, in "Dermod's" case, twenty would leave an ample margin for contingencies. He must take care to make his reservoir large enough to hold about eighty or ninety days' supply.—E. E.

[2203.]—**Measurement of Glass.**—All panes must be measured separately, the dimensions taken between the rebates, and all irregularly-shaped panes must be measured the extreme size each way.—T. P. C.

[2203.] — **Measurement of Glass.** — Plate Glass.—Each piece is measured superficially. Example: A plate 5ft. long and 4ft. wide would be charged as 20ft. Stained Glass.—This part of the question needs particularising. If simply used of one tint, in square sashes, then each piece is charged according to its superfice, as in plate glass; but, if fitted in lead lights, and of different tints, it becomes a question of agreement. As far as custom exists, the superficial contents of the whole window would be charged, the shaped portion being at a higher rate, and the border, if any, bearing an extra charge.—Chas. B.

[2203.]—**Measurement of Glass.**—Can the self-evident fact of "W. W.'s" being in a state of Egyptian darkness be made to serve to prove, even by a triumph of chicanery, that I am "*non compos mentis?*" Because he is very verdant, is it a natural sequence that I am a fool from the caprice of circumstances—*i. e.*, the juxtaposition? "W. W." has no part or lot in this matter. He is evidently of the genus "meddle and muddle;" his freaks herein assimilate to those of a bovine quadruped within the precincts of a porcelain repository. It is scarcely within the limit of possibility for so transparent a query to enter such an addle-pate, or for such an opaque cerebral development to be cognisant of the fact that five distinct methods exist of computing the superficial contents of an ordinary Gothic window. Finally, if, owing to inadequate mental calibre (1) you don't comprehend a question "evident to the meanest capacity;" or (2), owing to insufficiency, or total absence of technical knowledge, you *can't* answer it, or (3), owing to causes best left unsung, you *won't* answer it, but choose to "write yourself an ass" in preference, don't meddle with it; but rather take to heart and apply the trite maternal abjuration: "Never play with edged tools."—S. S.

[2213.]—**Satinwood Boards.**—Various coloured sticks made to match fancy woods are procurable in London, used by cabinet makers and marqueterie cutters. It is similar to sealing wax. I believe that no kind of filling has been invented that will alter its colour too, as the wood ages, excepting for walnut, because walnut scarcely changes colour from one to a hundred years old. Brimstone is good filling for satinwood. A mixture of white lead and litharge will stick in. Why not run molten metal, brass, lead, or pewter? Such linings would improve the look of the wood.—R. Charles.

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STATUES, MEMORIALS, Etc.

The Delisi Massacre.—On Friday week, which exactly completed a year since the foul murder of Mr. F. Vyner by Greek brigands, a mural monument to his memory was placed in one of the compartments in the wall of the south aisle of the choir of York Minster. It consists of a large panel of polished brass, dispersed in the centre of which is an Early English foiliated cross. The panel is ornamented with a bordering of blue enamel work, and is surmounted by a perpendicular Gothic canopy supported by polished Devonshire marble columns, the caps, finials, and crockets being carved in the German Gothic style. On an oblong polished brass plate underneath is the inscription in Roman characters. Below the inscription is inserted in the carved stonework an enamelled brass quatrerfoil bearing the arms of the Vyner family. The sculpture is from the chisel of Mr. Earp, of London, and the ornamented brass work is from the establishment of Messrs. Hart, Son, Peard, & Co., London.

Brighton.—A fortnight ago a monument to the memory of the late Rev. J. N. Goulty, of Brighton, was unveiled at the Extra-Mural Cemetery, Lewes-road. The monument, which has been erected at a cost of £100 by Messrs. Bennett, consists of a plain granite obelisk, standing on a slab of Yorkshire stone.

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MEETINGS FOR THE ENSUING WEEK.

Monday. *Institution of Surveyors.* Discussion on the "Rating and Local Government," and "Local Taxation" Bills. 8 p.m.

Tuesday. *Institution of Civil Engineers.* 8 p.m.

Wednesday. *Society of Arts.* 8 p.m.

Thursday. *Society for the Encouragement of the Fine Arts.* Third *Conversazione* of the Season (at South Kensington Museum). 8 p.m.

Saturday. *Museum of Practical Geology, Jermyn-street, St. James's.* Swiney Lectures on Geology. Lecture X. By Dr. Cobbold, F.R.S. 8 p.m.

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The City Mortuary.—We are glad that the obstructives have been finally defeated at the last meeting of the Court of Common Council. In spite of a resolution carried by the exertions of those members "who thought the present buildings good enough," on the 4th of April, it has been determined at once to proceed with the erection of the mortuary. at a cost of £5,000.

Our Office Table.

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The Late Mr. H. F. Holt.—We much regret to note the death of Mr. H. F. Holt. His name was, perhaps, remarks the *Guardian*, not as well known as it deserved to be; but among his friends he was acknowledged to be one of the most learned of art-critics: his communications to various societies, and his little papers in *Notes and Queries*, were always welcome. At the last meeting but one of the Archæological Institute he spoke with his usual energy, as well as at the last meeting of the London and Middlesex Society. There is a paper of his writing in the current number of the periodical we have just named, and he, although in the prime of life, has passed away. He held the opinion—and his holding it was to many a sufficient reason for being of the same mind—that the much-debated windows at Fairford were the work of Albert Dürer. He was particularly learned upon this artist's productions, and for his championship of the great Albrecht's wife he earned the *sobriquet* of "Attorney-General to Madame Dürer,"—which the profession he followed made most fitting. It is to be hoped that the work he had in hand upon the life of Dürer is sufficiently advanced to allow us to look forward to its publication. The interesting controversy on the Starston frescoes commenced at the penultimate meeting of the Archæological Institute, and then postponed, will never now be completed. Mr. Holt died on April 15.

Lectures on Fine Art at Cambridge University.—Sir M. Digby Wyatt, Slade Professor of Fine Art at Cambridge University, has this week given the following lectures:—Wednesday, "On Engraving;" Thursday (yesterday), "On Woodcutting;" and to-day (Friday), the lecture will be "On Lithography." The remaining lectures of the May term will take place as follows:—May 22nd, "On Stained Glass;" May 23rd, "On Enamel;" May 24th, "On Mosaic." The lectures are given at the Fitzwilliam Museum.

The Limmer Asphalte.—The Limmer Asphalte Company have obtained the contract for paving Lombard-street, and are proceeding with the work. This asphalte, though comparatively unknown in this country, is as extensively used in Germany and Russia as the Val de Travers has been in France. The streets of Berlin, Hanover, Magdeburg, &c., are paved with Limmer asphalte, and a portion of a Bermondsey-street was paved with it last August.

The North Bridge, Edinburgh.—In view of the proposed Tramways Bill of Edinburgh being carried, public attention is being directed to the necessity of widening the North Bridge, one of the main connections between the old town and the new. The bridge was built a century ago at a cost of £18,000, more regard being paid to solidity than to mere architectural beauty in its construction. At either end the bridge is 52ft. wide, but in the centre it is narrowed to 40ft., so that taking 17ft. as the width over which tramways will extend, this will leave but a very small space between the footpaths and the tramways. A plan has been projected by which the bridge could be made of the uniform width of 60ft. It is proposed to add 4ft. of masonry at the widest parts of the bridge, and to add 10ft. at either side of the narrowest part by means of projecting iron beams supported by iron corbels. The cost of widening the bridge in the manner proposed is estimated at about £7,000.

The Wall on the Thames Embankment.—At the last sitting of the Metropolitan Board of Works it was agreed to stay all further action with reference to the construction of a wall around the Crown property on the Victoria Embankment until the motion of Mr. W. H. Smith in the House of Commons shall have been disposed of.

Proposed New Opera House in Oxford-street.—With the Royal Italian Opera House in Covent Garden unopened, with two of the lessees of London theatres in the Bankruptcy Court, and with the known fact that some of the other London theatres are not paying, it is proposed to form a company to build another opera house in Oxford-street. The prospectus estimates that the cost of such building, together with restaurant or shops, will be, including all fees, expenses, &c., £17,000; the rent to be £3,650 to pay an interest of £17,000; deduct from rent £500 to pay necessary yearly expenses, &c., and £3150 will pay an interest of 19 per cent. to the investors. What an imagination the promoter of the new undertaking must have! Mr. Walter Emden is the proposed architect of the projected new opera house.

Society for the Encouragement of the Fine Arts.—In connection with this vigorous and flourishing society, an art college has been established, to afford to young artists and others (of both sexes) an opportunity of obtaining assistance calculated to advance them in those branches of the fine arts in which they may desire to receive instruction. It is proposed to commence the ensuing session with the following class lectures:—Æsthetics, by Dr. Heinemann, Professor at the Crystal Palace School of Science and Art; Anatomy, by Mr. J. W. Walton; History of the Fine Arts, by Dr. Heinemann; Perspective, by Mr. J. Saddler; Upon the orchestra, its component parts, and the elements of musical composition, by Mr. A. Gilbert, R.A. Mus. Besides these, there will be courses of lectures on "Decorative Art," and "Light and Shade and Composition;" and the following class lectures are in contemplation,—Architecture, Geology, and Meteorology, as applied to landscape painting, modelling, and painting. Members of the society are free to all class lectures.

Art Union of London.—The annual meeting of the subscribers to the Art Union of London was held on Tuesday week. The report presented to the meeting stated thated that the depression in trade, and the war, had caused a falling off in the amount of subscriptions, which this year is £10,171 7s. Of this sum £5,040 is allotted for prizes, and £2,681 2s. 10d. is the cost of the prints, &c. The reserve fund now amounts to £15,741. The prizes distributed include one work of art at £200, two at £150, two at £100, two at £75, three at £60, four at 50, besides nearly one hundred prizes of smaller value. In addition to these, bronze vases, chromo-lithographs, and busts of the Princess Louise are awarded.

Royal Architectural Museum.—This museum will be open to architects and their friends from ten a.m. to seven p.m. daily, during the Conference of Architects, on visitors entering their names in the book for that purpose.

Bridging the Forth.—An old plan for bridging the Forth has been brought to light by the *Dundee Advertiser*. The idea of effecting the object was, it appears, very carefully considered by a skilful engineer more than half a century ago, the engineer being Mr. James Anderson, of Edinburgh. The scheme proposed was to have a suspension bridge thrown over the Forth at Queensferry, and it was designed in the year 1818. The bridge would virtually have been three suspension bridges linked together, the north abutment being at North Queensferry, the first pier on Garvie Island, and the second about midway between that and the south shore at a point where the foundation would only have been 10ft. under water. According to the plans, the height of the bridge above high-water mark would have been 90ft., and the north and central spans would each have been 2,000ft., and the southern span 1770ft. These plans and sections are exceedingly interesting, and it is said to be intended to bring them under the notice of the directors of the North British Railway, as showing that the proposal of bridging the Forth was ingeniously considered so far back as the beginning of the century.

Asphalte Pavement in the City.—It seems probable that in the course of a few years all the thoroughfares of the City of London will be paved with asphalte. The success attending the experiments in Cheapside, Threadneedle-street, and Old Broad-street, has led the inhabitants of other localities to petition the Common Council, almost simultaneously, that their streets may be at once repaved with the new material. We notice that the Corporation is wisely trying more than one form of asphalte before deciding which to use generally, and would advise a continued trial before any final decision is arrived at.

Technical Education.—At the usual monthly meeting of the Livery Committee it was reported that the Turners' Company had resolved to give the freedom of the company and the silver medal as a reward for the best specimen of turnery, and that the competing works were to be sent to the Mansion House. The Lord Mayor was expected to give away the prize. It was also reported that measures were in progress at the East-end of London for promoting technical education, and Mr. F. W. Campin was directed to inquire of Sir Antonio Brady, who was understood to be connected with the matter, as to the nature of those measures, in order that the committee might be enabled to form a judgment as to their bearing on its action in regard to the promotion of technical education by the City companies.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, April 24th, the following donations to the library were announced: "House of Commons' Return on Tithes Commuted under the Local Inclosure Acts," "House of Commons' Return on Tithes Commuted under the Tithe Commission," by Lieut.-Col. G. A. Leach; W. Hope's lecture on "Sewage Irrigation," by the author. A vote of thanks was unanimously passed to the donors. The adjourned discussion on the paper by Mr. H. J. Morgan, entitled "The Progress in Utilisation of Sewage as Shown by the Experience Gained upon the Lodge Farm, Barking," was resumed, and after a long debate concluded. At the ordinary general meeting, held on Monday, May 1st, the following donation to the library was announced. "Transactions of the North of England Institute of Mining Engineers, Vol. XIX. 1869-70," by the Council of that Society. A discussion took place on the "Rating and Local Government" and "Local Taxation" Bills, and was adjourned to the next meeting.

The Tower of All Hallows' Church, Upper Thames-street.—At the meeting of the City Commissioners of Sewers on Tuesday last, the Finance and Improvement Committee brought up a report in reference to taking down the tower of All Hallows' Church, Upper Thames-street, for the purpose of widening the street, in which the Committee stated that, after inquiring into the matter, they found that the parish expected the Commissioners to be at a cost for the works of at least £5,000, and that under the circumstances the Committee considered it was not desirable to take any further steps at present therein, as it appeared probable that the church would shortly be removed under the Union of Benefices Act, which they thought very desirable. They therefore recommended that the matter should be allowed to drop for the present.

Fall of Houses in Bermondsey.—At a meeting of the Bermondsey Vestry on Monday evening, the Inspector of Nuisances reported that a house in Anthony-street had fallen down, but fortunately without anyone being hurt. This is the second house in the street which has fallen, and some of the other houses are said to look as if it was their intention to follow suit. The attention of the Metropolitan Board of Works has been directed to these dilapidated buildings, and it is to be hoped that, for the public safety's sake, the district surveyor has taken such action in the matter as to prevent further accident.

National Gallery.—It appears, according to the *Academy*, that the Government, while advancing the large sum of money for the purchase of the Peel collection of pictures, does so with the clear understanding that the annual sum placed at the disposal of the Commissioners for the National Gallery is thus forestalled for a number of years. The National Gallery had actually two years' (£20,000) allowance to dispose of; the Government have therefore advanced £55,000 to make up the £75,000 to expend on this enormous quantity of things by Wouvermans, Metzu, Van de Velde, Hobbema, &c., &c., and for five years and a half the National Gallery can make no additions, except by application to the supreme authority. In this case, one would say Sir William Boxall's office will not be very onerous to him.

Roman Remains in Mark-lane.—Commenting on the communication which appeared in the *Times* last week, the Rev. J. Hoskyns-Abrahall writes, expressing his opinion that, on examination, it would be found that in this instance a tesselated pavement has partially sunk, from there being underneath it a hypocaust. This, producing the same "arch-like form," has occurred at the Northleigh "Roman villa," a mile west of his house. By adopting the method used at the site of Ancient Carthage, the Mark-lane λιθδτρωτον, or any other, might be taken to the British Museum without the loss of a single *tessera*.

THE INSTITUTION OF CIVIL ENGINEERS.

At the meeting of this society on Tuesday, the 2nd of May, Mr. Charles B. Vignoles, F.R.S., President, in the chair, twelve candidates were balloted for and declared to be duly elected, including three members—viz., Mr. William John Bird Clerke, A.B., Trinity College, Dublin, Ex. Engineer, P.W.D., Bombay; M. Louis Joseph Aimé Thomé de Gamond, Paris; and Mr. Robert Piercy, Great Winchester-street-buildings. Nine gentlemen were elected Associates, viz.:—Mr. Herbert Chapman, Assistant-Engineer, Great Southern of India Railway; Mr George Cooper, General Manager for the Contractors, Central Argentine Railway; Mr. Henry Tanner Ferguson, District Locomotive Superintendent, South Devon and Cornwall Railways; Mr. Druitt Halpin, Locomotive Department, Scinde, Punjaub, and Delhi Railway; Mr. Hodgson Monteith Layard Jones, Old Broad-street; Mr. Charles Ferdinand de Kierzkhowski, Great George-street; Mr. Walter Hy. Maudslay, East Greenwich; Mr. James, Assistant-Engineer, Madras Irrigation and Canal Company; and Captain John Lidstone Watts, R.E., Assistant-Secretary, Government of India, P.W.D., Calcutta. The Council reported that, acting under the provisions of Section III., Clause VII., of the Bye-Laws, they had, during the present session, transferred the following gentlemen from the class of Associate to that of Member:—Messrs. Benjamin Chapman Browne, Herbert Louis Augustus Davis, George Eedes Eachns, Edward Gotto, Thomas Manson Rymer Jones, Algernon Joy, and Henry Shield.

Chips.

An extensive and very valuable bed of fireclay has recently been discovered on Hingstown Down, in Cornwall, which it is now proposed to work by a joint-stock company.

The new railroad bridge across the Missouri river, at S. Louis, has been finished, at a cost of 1,000,000 dollars. It is the largest drawbridge in the world.

There is some talk of an industrial exhibition at Smyrna.

The cost of the new houses of Parliament to be erected at Berlin is estimated by the Committee of the Federal Council at 750,000 thalers.

A new station on the Tottenham and Hampstead branch of the Midland Railway was opened on Monday, called West Tottenham and Stamford-hill. The inhabitants of the above district will thus now have direct access to the City and West-end, *via* the Metropolitan Railway. The junction with the Midland Railway is at Kentish-town.

In spite of the opposition of the Metropolitan Board of Works, the Bills for the preservation of Wandsworth, Wimbledon, and Putney Commons have passed the Committee of the House of Commons.

Waterbeach Parish Church, Cambridgeshire, was reopened on Tuesday week, after being restored at a cost of £1,000.

It is rumoured that a movement is about to be inaugurated for the erection of a memorial of the late Sir John Thwaites on the Thames Embankment.

The Freemasons of Oldham have opened a new hall, built at a cost of about £2,500, in Union-street. The building is of stone.

The Metropolitan Board of Works will to-day open the tenders for the erection and completion of the new Chelsea Embankment, one and a half mile in length, and extending from Chelsea to the Old Battersea-bridge.

A few days ago the roof of the old parish church of S. John, Bacup, at the west end, and directly over the organ, communion-table, and reading-desk, fell completely in, reducing the entire place to a perfect wreck.

It is said that the old church at Denbigh is to be converted into a grammar school.

The Clerkenwell Vestry have revoked, by a large majority, their resolution to re-pave Exmouth-street with granite, and have decided to use asphalte instead.

A report from the Board of Trade on the tramways of the Metropolis will shortly be laid before Parliament.

The Metropolitan Board of Works has ordered the renumbering of the houses in Great Winchester-street, Great Winchester-street-buildings, and Winchester-buildings, all in the City.

The City Commissioners of Sewers resolved, at their meeting on Tuesday last, to borrow £100,000 from the Bank of England on the credit of the Consolidated Rate, to be paid off by equal instalments, with interest, within the term of twenty years.

PERSONAL.

As will be seen in another column, Mr. T. H Wyatt was, on Monday evening last re-elected President of the Royal Institute of British Architects for 1871-72.

Captain Edgcombe, R.E., principal of the Madras Civil Engineering College, has accepted a professorship in the new Engineering College about to be established at home under Colonel Chesney. The salary attached to the professorship is £600 per annum.

Both Messrs. Fry and Neave, and Messrs. Markwick and Thurgood, who had successively taken the contract for the construction of the Chelsea embankment, having raised objections to proceeding with the work, the Metropolitan Board of Works has resolved to invite further tenders.

Sir William Tite has been re-elected a Vice-President of the Society of Antiquaries for the present year.

Professor Gustav Jäger, the distinguished historical painter, died at Leipzig on the 19th April, in his 63rd year.

Miss Burdett Coutts has offered to hand over Columbia Market to the Corporation of the City upon such conditions as will realise her intentions in regard to the poor people of the metropolis. Miss Coutts has expended about £250,000 upon the market.

Mr. W. G. Larkins gave a lecture on Thursday week before the Society for the Encouragement of the Fine Arts, the subject being "The Influence of Cheap Prints on Public Morals." Mr. S. C. Hall occupied the chair.

Lord George Hamilton, M.P., recently laid the corner-stone of the Church of S. John the Evangelist, Willesden.

THE BUILDING NEWS.

LONDON, FRIDAY, MAY 12, 1871.

SCULPTURE AT THE INTERNATIONAL EXHIBITION.

A REMARKABLE progress has been made in the appreciation of sculpture in England since the Great Exhibition of 1851. It will be remembered that then, and long after, Power's Greek Slave, the Reading Girl, and the Amazon, were regarded as wonders of art; in fact, our annual displays in Trafalgar-square had consigned this beautiful craft to an utterly inferior position. It was buried in a cellar; it was represented by puffy busts and commonplace nudities; we have the same eternal Venus a hundred times repeated; the same nymphs, Dianas, daughters of the sun, and bathers, scarcely ever, unless when Baily, or Gibson, or MacDowell figured forth the human form, betraying a gleam of genius. The first artist's Eve at the Fountain enjoyed a long reign; the second's tinted Aphrodité disappeared too rapidly from public view to become very popular, though his Aurora brightens many a gallery; but in the interval which has elapsed, we have witnessed a wonderful progress. No doubt the conventional types intrude; still Clytie dies on the old approved plan; still Musidora bends her bashful head; still the girlish Nausicaa sports among her maidens; but there are signs of a nobler feeling amid "the jargon of the marble mart." Much of the degeneration to which we have referred was due to the vulgarity and ignorance of English travellers abroad. They would bring home statues; they would have them at a cheap rate; they would insist upon their commissions being executed swiftly, as if by steam. Hence the glut of rubbish, roughly cut, unpolished, imitative, and devoid of thought, which is piled up in every auction-room of the kingdom, after satiating the vanity of a soon-wearied possessor. We begin to perceive, however—although the indications are few, because sculpture is not a popular art in this country—manifestations of a better sentiment breathing through it. And this is more to be noticed, insomuch as we have no supreme teachers now. The Greeks have dropped the chisel, and no beauty is created from the white bosom of Pentelicus. The Italians, although they rejoice in the quarries of Carrara, are stationary, except at intervals, when such an image as that of the "Dying Napoleon," by Lara, fills the imagination with awe. We cannot conceive, however, a study of deeper interest than that of sculpture, if only the visitor to exhibitions will turn for awhile from the jingle and glitter of the miscellaneous departments, and try to concentrate the mind upon those figures, wrought as in solid snow, which, even more than painting, make humanity appear divine. Nothing from the pencil of Raphael or Titian equals—except, perhaps, in expression—the Graces or Dancers of Canova, or the Classic pictures—for they are pictures—of Flaxman. Compare them with the lifeless effigies of the Benoni school in Italy, and of Banks and his pupils in England. It was not always at beauty they aimed; the one modelled a pope and the other a judge. Flaxman's taste, indeed, was rather heroic than delicate, though he, too, could exercise his magic upon the Mother of Love and the pretty Cup-bearer of the Gods. But in his, as in most other cases, professional necessities interfered grievously with the full ripening of a dreamy and undaunted genius. Portrait sculpture is an abomination. We could have dispensed with Mrs. Tighe for the sake of a second Psyche; and for one Dædalian ideal we would surrender a thousand monuments of the Yarborough family. Now, ranging through the exceedingly imperfect collection of sculpture at Kensington, and avoiding, upon principle, individual criticisms, what do we find? That this mercenary art still predominates, notwithstanding the improvements we have referred to; and that a reason universally assigned is that people will pay more for their own ugliness in marble than for any vision. With all our ambition, shall we ever have another Laocoon, or another Apollo Belvedere? Another Venus of the Capitol, or Artemis with her bow? We are under some circumstances of disadvantage, unquestionably. In the first place, our climate is not propitious to the study of the human figure; in the next, our manners, fashions, and modes of thinking interfere materially with the freedom of art; then, our sculptors have long been hampered by preposterous traditions; finally, it is possible that they cannot command models of the purest type unless abroad, in the South. We would, however, point out, both in the Exhibition structure, and in the Museum at South Kensington, the curious lines by which this most creative of all arts has made its way. The Egyptians were no lovers of beauty, but inordinately addicted to sculpture; their works were at once colossal in dimensions and deformity; they were without ease, grace, or variety of attitude, stiff, grim, and repulsive as though they had been executed by geometricians. Yet that nation had the highest sense of the sublime, understood the proportions of the human form, and was not without a knowledge of anatomy. Why, then, did it never produce a lovely statue? Was it that no loveliness existed in the land? We are constrained to this opinion, because beauty, though born in Egypt, was never born of it, a view not discredited by the example of Cleopatra, whose face has been so often libelled in pictures and statues, since Cleopatra was a Greek of the purest Grecian blood. The specimens at the Crystal Palace and the British Museum may profitably be examined, after those at South Kensington and in the new Exhibition buildings. But, of course, ancient Greece bears away the palm. It is impossible for our artists not to imitate its types. Being perfect, they cannot be surpassed. Being perfect, variation from them means degeneracy. Where is it conceivable that any man can excel Minerva Callimorphus, or the Amazon whose limbs were so exquisite in outline that some of those Pagans adored her as they did the Callipyge? It simply remains, therefore, as we cannot be rivals of the Athenians, to be their pupils. In one sense, no doubt, our sculptors do sit at the feet of the antique masters, but in a very narrow sense. To copy is not to study. All the chalk Venuses de Medici, Niobe groups, Cupids, Hebes, Hercules, and Dianas in the world will not make an artist. These are no more than exercises to the eye and hand: for there is a science in sculpture not to be acquired by mechanical practice. Observe the horses on the Elgin marbles, and compare them with the rigid and lifeless experiments of Oriental art. The Greeks knew how to vary their figures, with absolute accuracy, in the attitudes of preparing to run, striking, bearing a weight, making ready to leap, leaning, flying, and falling, and Flaxman lays great stress upon these points. They never forget the attributes of their statues, divine or human, but never forced them into melodramatic prominence. And the distinction of sex was spread by them over the entire form—it was as apparent in the foot as in the face. All these are delicacies of art impossible to overvalue; nevertheless, they are too frequently missed; but it does not follow that sculpture must be inferior because it is modern, or we should be guilty of ingratitude to Pisano, Donatello, Ghiberti, Michael Angelo, Cellini, and Da Vinci, all of whom are illustrated in the favoured region of South Kensington. Moreover, we have mentioned Canova, Flaxman, Gibson, and Baily, Flaxman's most illustrious pupil. It may be hoped that the school founded by them will be enlarged and enriched, as our younger artists may enlarge and enrich it if they will only resist the temptations which the tastes of our time too often hold out to them, especially those of rapid work, of simpering prettiness, of dramatic attitudes, of fantastic accessories, and of servile imitation. In nothing is the art of design put to a more crucial test than in the conception of a statue; it is excessively difficult to avoid remoulding some old work, and equally so to avoid mannerism in a new one. Yet the art is so exquisite in itself that no love and no patience can be said to be thrown away upon it.

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ARCHITECTURAL DRAWINGS AT THE INTERNATIONAL EXHIBITION.

WE have already stated that the collection of architectural drawings at the International Exhibition does not comprise many new drawings, nor, indeed, any that have been apparently made for the purpose, nor can they be even considered fairly representative of the past work of the whole of the profession. A great many of our first architects have not responded at all to the invitation of the Commissioners, and others have only contributed a drawing or two that they might happen to have by them. The Gothic school in particular is conspicuous by the absence of such names from the catalogue as Street, Burges, Seddon, Penfield, Shaw, Christian, and others. On the other hand, the Messrs. Barry, Waterhouse, and Wyatt are large contributors, and several of the recent competitions have furnished specimens of such work as is usually produced under such high-pressure circumstances. On the whole, the number and importance of architectual drawings that have been sent is sufficient to render it desirable that we should record them, and note their individual character, as we propose to do upon this occasion; and we may again, perhaps, consider their general bearing as to the history of architecture in our day and the promise they afford for the future. Messrs. Banks and Barry's competition design for the Foreign Office stands first on the list—a monotonous three-decker pile of modern Italian, with an inelegant central block to the side facing the Park, and the angles are marked by pavilion-roofed towers, which are the best features in the design, and sufficiently stately. We turn, however, from a contemplation of its somewhat commonplace detail, with a sigh of relief to Mr. E. Sharpe's beautiful drawings of the interior of the church of S. Edydius, immediately above the last described, and of the Lady Chapel, Tournay Cathedral, hung as a pendant near. Mr. E. M. Barry's perspective view of the Cannon-street Hotel claims attention as the representative of an important finished work; the same character of high-roofed angular wings to those remarked upon above give the principal character to the façade, but the manner in which the turrets are attached to one side of these, and crowned with quasi-spires, gives them a lop-sided and unhappy effect. The building is undoubtedly a striking one, from its height and mass, but the detail is not what we ought to expect from our architectual Royal Academician. Messrs. Came and Jowers's drawing of villas at Lancing does not deserve its prominent position on the line; whereas Messrs. Speakman and Charlesworth's competion design for Manchester Town Hall, which is in the row above, might fairly have claimed to have changed places with it. This is not the best point of view of their proposed building, and shows a somewhat heavy and inelegant grouping, and other parts, as well as the smoking tower in the distance, have decidedly a modern manufacturing look about them. Mr. D. Brandon's Bayham Abbey is a large modern mansion, with sundry Elizabethan trappings, which might well be dispensed with, seeing that there is not much of Elizabethan feeling in the design. Sundry sham gables, covered with vapid scroll-work, are offensively obtrusive. Mr. Sorby's Town Hall, Bromley, is represented by a clear and vigorous drawing, but, with some merit in arrangement, partakes too much of the prevalent vulgar character of Victorian Gothic, as, for instance, in the spiky lancet heads of the windows of the belfry stage of the tower. Mr. E. M. Barry's beautiful drawing of his design for the National Gallery deserved, for its own sake, as well from the importance it attained and from its success in the competition, a position on the line of sight, rather than that allotted to it on the top row. The too great number of its domes and turrets, and non-predominance of any one of them, is the defect of the design, which otherwise is grandiose. One cannot help wondering what relation the practical, well-lighted portion of the structure can have to these colonnaded and purely ornamental parts. Utility is certainly not the grindingstone of modern Classic architects. The exhibition below of Messrs. Banks and Barry's new building for the use of the learned and scientific societies at Burlington House will serve to keep in memory the structure which has been at a standstill in Piccadilly for so long a time that we wonder the police have not ordered it to move on. It might remain at a standstill, however, for all the interest we can manage to feel in it, notwithstanding that the metropolis is as yet ignorant of any archway of similar gigantic dimensions, as that which we are so often told forms its principal feature, and we certainly would ourselves devoutly pray that it might never attain to the eminence that the proposed row of terminal ornaments would give it. These hybrids between pots and pyramids actually overtop the chimneys that appear in the design. In the next bay of the corridor we have Mr. Verity's successful design for Messrs. Spiers and Pond's proposed structure, to be called "The Criterion." It is well massed, but very heavy in the part below the lofty pavilion roofs. The detail is no better and no worse than in the Cannon-street Station, and the great archway over the entrance might rival that of Burlington House, but has not the same excuse on the score of utility. Below it is a very good but too brown a drawing of one of the entrance archways of Amiens Cathedral façade, which of course, being as purely ornamental in its purpose as Mr. Verity's, might seem to have been placed in juxtaposition to disprove what we have above advanced on the subject. There is truth, however, in the objection which might be applied to both cases, though the vast archway at Amiens has claims to regard as a work of art, encrusted as it is with sculpture, to which the other, of course, has no pretensions. Mr. E. M. Barry, and Messrs. Banks and Barry, who are large contributors, appear again side by side below, the former with four delicate drawings in one frame for a new House of Commons Division Lobby and Reading-room, as proposed for the Houses of Parliament, in which his talent for arrangement is conspicuous, though correct taste as to detail is not so. As is well known, Mr. Ayrton prevented the execution of these designs, and carried out some less important ones under other superintendence. Bylaugh House, Norfolk, the subject of Messrs. Banks and Barry's drawing, is a large and certainly stately building of an Elizabethan character, in which, fortunately, a profusion of their objectionable pyramid-pots are overshadowed by well-grouped masses of chimneys. Messrs. A. Smith and T. Risley exhibit a preposterous design for a sham modern castle, called Castle Carr, Yorkshire, "not yet completed:" such a ridiculous travesty of feudal architecture ought never to have been commenced in this century. Mr. T. H. Longford's drawing of a restoration of Henry the Third's tomb in Westminster Abbey is hung too high for close inspection; it seems a creditable and careful piece of work, but sadly injured by the tasteless way in which the inscription is appended, and the drawing finished with a heavy background; as a pendant is hung a similar restoration of the shrine of Edward the Confessor, also by Mr. Longford. Better in having a clear background, the reliquary above the shrine appears too insignificant for the substructure. Mr. J. Crawley has a good drawing of the first appropriate and unpretending country mansion we have come to. It is in fair harmony with old English work, and yet adapted to modern requirements. It is said to be in Hertfordshire. Messrs. Mills and Murgatroyd have sent their competitive design for the Natural History Museum upon the site of the Exhibition building of 1862. Above the principal cornice line they have indulged themselves in all the meretricious weaknesses of the modern Italian style; but if all their pepper-castors, vases, and sham gables were swept away, the substructure in its massing and general features would appear very meritorious. The drawing is a delicate one, executed in sepia. Far inferior is the gin-palace-like block of building above, poised upon a few sheets of plate glass, entitled "Proposed premises for Messrs. Brandon in Oxford-street, by S. Giles." The Sailors' Home, Bombay, by J. M. Anderson, is a suitable and well-thought-out design under novel conditions, and the detail of the light colonnades of the verandas which surround the building will repay a close examination. Below this drawing is another by Mr. Charles Barry (of the firm of Banks and Barry) of his great work, Dulwich College. The drawing does not do the building credit, for although the composition is formal and the detail by no means first-rate, the work itself exhibits the evidences of lavish expenditure of careful thought throughout. A drawing of the interior of the great hall hangs near. The roof is ponderous and overdone, though well-intentioned and ambitious. The last drawing in this bay is the first of the numerous contributions of Mr. Alfred Waterhouse. It represents the new buildings of Gonville and Caius College, at Cambridge, facing the King's Parade. The drawing is an able one, from Mr. Waterhouse's own hand, and the building unquestionably picturesque, and has over the entrance archway a lofty tower with corbelled circular turrets at each angle, and is covered with a spire flanked by high chimneys. The archway is low and semi-circular-arched-headed. The dormers are bold, and the details a sort of Burgundian version of Italianising Late Gothic; the double stone roof of the oriel at the angle of the building is, however, heavy, even for the style that he has adopted in this instance. Mr. Horace Jones's British and Irish Magnetic Telegraph office in Threadneedle-street is a thoroughly Victorian version—or rather we should say corruption—of Italian architecture, which we cannot stoop to criticise. It is of the City civic. Mr. J. H. Pollen exhibits a drawing of much interest, that for the decoration of the principal entrance archway to the museum at Oxford. It is a curious and original experiment founded upon Venetian work, as expounded by Mr. Ruskin. Mr. Pollen is not answerable for the unpleasantly exaggerated pointed arch of the opening. We fail to see much power in the treatment of the delicate ornamentation, and could wish the figures and animals selected for illustration freer from what looks like distortion or caricature; still there is in it an exemplification of the lamp of sacrifice, not unmingled with sparkles from that of life, which deserve recognition. Beneath a nightmare-like vision of a cathedral sent to the Lille competition by Isaac Holden and Son, and a tamer but saner one prepared as a Royal Academy probationer's drawing by some nameless student hung beside it, is a drawing by Mr. T. H. Wyatt, the President of the Institute of Architects. This is his competition design for the Manchester Town Hall. It is spoilt by the hideous compilation of boxes piled up as a spire over the central block of the building, otherwise the angles are rounded off, and crowned by small domes in a manner that is picturesque, and the main story is not without dignity. The entrance archway resembles that which the world may yet hope to see at "The Criterion," grandiose, but injured in this case by the pedimented doorway within, which seems to proclaim the inutility of the great archway that overshadows it. Beneath is a drawing of two of the blocks of building of which S. Thomas' Hospital, by Mr. Currey, are composed. Here they are seen in all their naked ugliness, rendered unnecessarily chilling by the coldness of the drawing itself. Mr. T. H. Wyatt has also a large drawing of the quadrangle of the new Liverpool Exchange, a melancholy work, with the ugliest of curved pavilion roofs over the centre and ends of the wings that were ever invented. Mr. G. Truefitt's Bank at Altrincham, Cheshire, is a very clever and satisfactory rendering of the local method of timber construction, but the drawing is cold and unattractive. Mr. C. H. Thomas' West-end mansion would pass muster among modern speculating builders' work of the first class, were it not for the abortions of roofs he has disfigured it with. Mr. H. A. Darbishire has a drawing of his Columbia Market, Shoreditch, a structure which, architecturally speaking, is beneath contempt. What would our Mediæval ancestors have said if they had known that such stuff would ever be fathered upon the Gothic style, which they refined with such infinite care? Mr. Waterhouse's drawing, in his best style, of the central hall for the new Natural History Museum at South Kensington is quite a relief after the contemplation of the last. This is in the round-arched style, in which he is comparatively at home. Messrs. Salamons and Jones have sent a drawing of the exterior of their Reform Club at Manchester—another of the striking modern Gothic buildings for which that city is becoming famous. The general scheme of façade is good, but the detail wanting in purity and refinement, and the angle turrets are heavy, and their upper story more novel than pleasing. Mr. Edis's small warehouse in Budge-row, City, is a tolerably satisfactory treatment of a difficult problem, the treatment of a mere slice in a street. Here the Mediæval style he has adopted is certainly the most pliable for the purpose. Mr Joseph Clarke's Hoddesdon Church has a high tower with a saddle-backed roof. The two main stories of the tower are not very harmonious. Mr. W. H. Brakspear sends what he calls a "duplicate drawing" of the Houses of Parliament, prepared for Sir Charles Barry in 1843—no one will regret the modifications afterwards made in the carrying out of the work. Below is a very clever and effective sketch of part of the triforium in Westminster Abbey, by Mr. Waterhouse. Alongside of this is Mr. F. P. Cockerell's architectural composition entitled "Laborare est orare," a light and delicate drawing of some monks in a Mediæval Italian cloister engaged in carving various figures, and next to this is certainly the most powerful and able drawing we have yet seen by Mr. R. P. Spiers, of the portico of Esneh Temple. In the centre of this bay is a design by Mr. James Fergusson for the Albert Memorial in Hyde Park. If it were not for the four smaller editions of it which surround the central and larger one, we must own that, although open to criticism in point of detail, it is a fine massive pile, infinitely to be preferred to Mr. Scott's birdcage like one that has been erected. There is no question here of the manifest ability of the piers to support the arches, and the stone dome with the seated figures at the angles fitly and harmoniously crown the whole; the arches are semicircular, and Romanesque in feeling. Had the central monument been raised upon such a flight of steps as Mr. Scott's, and the smaller ones at the angles left at the bottom, the effect would be vastly improved. Mr. J. James exhibits here two drawings of his Spring Hill College, Birmingham. We prefor the view from the back, which is picturesque; the treatment of the detail of the façade is indifferent, and spoils what otherwise might have been a fair design. Mr W. Haywood's houses, shown in his drawing of the Holborn Viaduct, are very uninteresting, and Mr. Marrable's Chancel of S. Peter's, Deptford, though clever in an engineering point of view, is not a style of ecclesiastical architecture at all to be desired. Mr. Pollen has sent a curious and suggestive drawing for the treatment of the timber and plaster work of a ceiling. Unfortunately, it is hung rather too high for examination. It is stated to have been executed at Blukling Hall. Mr. W. White has also his design for S. Saviour's Church, Highbury, with a stately nave, but the central tower sadly wants raising; and Mr. J. H. Metcalfe has a charming pen-and-ink drawing of Burford Hall, Cheshire; the buildings are unpretendingly and well treated. In the next bay are several large drawings, of which the chief are Sir J. Pennethorne's original, intermediate, and the executed design for the University of London in Burlington Gardens. These are drawn, unfortunately, to very different scales, which renders a comparison difficult, but it is evident that many regrets would be wasted over the second version, in a sort of Italian Gothic, which was partially commenced. Mr. E. M. Barry appears again here with a characteristic and rather vigorously composed design for a town mansion for the Grosvenor estate. Mr. Henry Dawson has a bird's-eye view of his extensive building for the London Orphan Asylum at Watford, and Mr. T. H. Watson his premiated design for the same building; the former is decidedly the more practical. Mr. D. Brandon exhibits the elevations of the two façades of his Junior Carlton Club, and Mr. Gibson his Birmingham branch office of the National Provincial Bank. In the next bay are Messrs. Speakman and Charlesworth's really effective design for the Manchester Town Hall and portions of Mr. J. O. Scott's more pretentious one; the interior of Messrs. Davis and Emmanuel's new synagogue; and a very pretty drawing of a thoroughly old English looking mansion in Hertfordshire, by Mr. J. Crawley, and another by Mr. Edis at Buckden, in Huntingdonshire, apparently tinted by the same hand, and, the entrance archway excepted, the same remark might apply to the architectural detail; the grouping, however, is not so good. The weakly-tinted drawing of Mr. G. Goldie's Pro-Cathedral at Kensington does not do justice to that really fine interior. We have here also Mr. Horace Jones's Smithfield Markets, of which we are pleased to be able to speak in higher terms than of the former drawing of his mentioned by us. We consider this, on the whole, a fairly-treated building for the purpose, although we never could understand the use of so much inflammable timber in its roofing, and fear it might be easily destroyed if any neighbouring building were to catch fire. The last drawing in this compartment is a most important one, and of present interest; it is that of the new Natural History Museums at South Kensington. Although we cannot approve of the domical terminations of all the towers, and would wish to see the whole of these thoroughly and radically revised, we consider the main part of the structure simply and well treated, and it would form an imposing public building. The style is Round-arched Romanesque, but in the ranges of panels below the windows Gothic forms are introduced, which we should recommend to be avoided. In the next bay we have a mansion, Greenhurst, near Dorking, by Mr. St. Aubyn, picturesque, but a little wanting in repose; Mr. Emerson's fountain at Bombay, rather a close imitation of a fountain designed by Mr. Burges—but as this is a very good variation upon an excellent tune, we are glad that it has been actually carried out; another country mansion by Mr. Crawley we do not like so well as his last described. Mr. L. Collmann has an Italian dining-room ceiling at Deysbrook, West Derby, near Liverpool, harmoniously decorated. Here, also, are two more of Mr. Longfield's able and careful restorations of tombs in Westminster Abbey; and a restoration of a Perpendicular screen in Paignton Church, Devon, by W. Brakspear; and of mosaic pavements in Canterbury Cathedral and Westminster Abbey, by Mr. F. Judge; a pretty little design for parish schools, Chesham, Bucks, by Mr. Morton M. Glover, who also sends a drawing for a proposed Congregational Church at Stamford-hill—a vast improvement upon the usual character of such buildings; and Mr. Worthington his grandiose design, in not very satisfactory Gothic, for Manchester Town Hall. In the next compartment, among a number of drawings of little interest, we have creditable schools at Malton, by Messrs. Aldridge and Willis; a Parisian-looking design for a museum, by Mr. Spiers; Ephin Cathedral, by Mr. Goldie, a heavy and not prepossessing work; and a good pen-and-ink drawing of a rather fine interior of hall, by W. Lee, part of a competition design for the Manchester Town Hall. The best work in the next bay is Messrs. George and Vaughan's Bodegàs, in Granada, for the Duke of Wellington. Mr. G. G. Scott has his design for the Albert Hall, a composition on a quatrefoil plan, with a central dome over the crux and semi-domes over each wing, in elaborate Romanesque; and Sir M. D. Wyatt a number of pretty but slight architectural sketches. In the next bay we find a few old friends, and among them Mr. T. C. Sorby's competition drawing for the Midland Station and Hotel at S. Pancras; Mr. E. Barry's exterior of Crewe Hall, and interior of the restored S. Stephen's Crypt, Houses of Parliament; a somewhat picturesque structure forming the entrance to the Market-place at Aylesbury, by Mr. David Brandon; and Mr. G. Truefitt's Bank at Manchester, which is more quaint than architecturally correct. In the next compartment we have several of the really fine drawings which the Manchester Town Hall competition called forth, in the centre that of Mr. G. O. Scott, flanked on either side by those of Messrs. Speakman and Charlesworth, while below is that of Mr. Waterhouse, with one submitted for the Assize Courts in the same town by Mr. Frederick Maw, who kindly gave a Classic as well as a Gothic dream to choose from. Mr. Emerson has here his Allahabad Cathedral, and Mr. T. Wyatt his Mansion in Park-lane for Sir D. C. Majoribanks; and in the last bay we have in the centre Mr. Somers Clarke's General Credit Offices, Lothbury; a bank erected at Salisbury, by Mr. Henry Hale; a fine drawing of the interior of Sherborne Abbey, by Messrs. Slater and Carpenter, who also send their rather overdone reredos of Chichester Cathedral; Mr. Darbishire's parody of a cathedral interior in the hall of his Columbia Market; and a heavy-looking Scotch mansion, by Messrs. Peddie and Kinnear, entitled Newtonaird, Dumfries-shire. The few foreign architectural drawings that have been contributed we may notice upon some future occasion, but the space which we have devoted to this collection of architectural drawings is as much as we can spare upon the present occasion.

VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."[*]

VII.

THE question of the vaulting of the transept is solved in a simple fashion by means of barrel vaulting below the springing line of the abutting quadrant arch which resists the thrust of the main vault. (See Fig. 14, on last week's sheet of illustrations.) This system of construction rendered the churches dark and gloomy when necessity compelled them to be large, and though this might suit the south of sunny France, yet it was found inapplicable to the duller, cloudier climate of the north. Direct light was there found to be an imperious necessity; but how to supply this want, and at the same time obtain that security from the ravages of fire afforded by a vaulted nave, was a subject of some perplexity to contemporary architects. At first they shirked the solution of this difficulty; the aisles were frequently vaulted, and a clerestory inserted above them, but the nave yet remained covered only by a wooden roof, and a good example of this system is presented in the abbatical church of S. Remy at Reims, an edifice of the twelfth and thirteenth century, and which system prevailed on the banks of the Marne, the Saone, and throughout Normandy. Of this mode of construction we give a suggestive illustration from a later class of church common in Normandy and in the Champagne district, which was common about the early part of the thirteenth century (See Fig. 15, in the present number), and which will commend itself to the necessitous builders of cheap churches and chapels. In order to save the expense of high nave walls, and yet, at the same time, to obtain a sufficient amount of light in the body of the church, the nave wall is pierced with windows above the piers, the arches which cross the aisles carrying the gutters from their roofs, and the nave is, like the aisles, covered with an open timber roofing. Where wood is easily procurable, and stone difficult to get, it is not easy to find a cheaper mode of obtaining a good church than the expedient here adopted, as the least possible height proportionate to the breadth is thus necessitated, and at the same time ample light is admitted to all parts of the interior. Such simple expedients as these did not, however, satisfy the builders of the larger edifices needed in those days. A vaulted roof to the nave for all important churches was looked upon as a necessity, second only to the admission of light, and the architects set to work to find a means of combining these two desiderata. They tried many experiments, and the tendency of them all was to raise the window head up into the vaulting. This was done timidly at first, and after the old Roman manner; but the curvilinear line produced by the junction of the soffit arch of the window vault with that of the main space did not harmonise with the other features of their buildings. To bring the heads of the windows below the springing line of the main vault necessitated an enormous height, and before the introduction of flying buttresses was almost an impossibility, as the means of resisting the thrust were not easy to find. The greatest step taken at this epoch, and one which led to enormous results, was that induced by the "happy thought" of crossing the one vault by another of equal altitude, and one of the earliest examples of this treatment on a large scale is found at Vézelay. This mode of vaulting was by no means uncommon in small spans, and will be found in the plans and section of the nave of Notre Dame du Pont at Clermont Ferrand, before referred to (Fig. 12), but it had not previously been attempted on so large a scale. In our next we shall give an interior view of this grand church, looking towards the entrance, from which it will be seen that by the means here adopted the altitude of nave was reduced to manageable proportions, and a good space of window light obtained, whilst the thrust of the nave vaulting was transferred to points immediately over the nave pillars, paving the way for the introduction of resistance at these points by means of flying buttresses. The importance and progress effected by this latter feature we have before commented upon in our notice of M. le Duc's definition of flying buttresses (*arc boutant*), and when once the use of these was established their combination with crossed vaulting led to all the boldness of construction and the chiefest part of the beauty of Gothic architecture. Progress in the art was now very rapid, and in the end of the twelfth century the pathway through the difficulties of Mediæval construction was distinctly visible, and able pioneers set out to clear it and make it practicable. Such an one was the architect of Notre Dame at Paris—a work commenced in 1168. He attempted a very great task for his day—it was to construct a nave of 11 metres span between the supports, with doubled aisles, having a large upper gallery, all vaulted. This is how he commenced his work (see Figs. 16, 17, and 18). He gave to his collateral aisles only a moderate height. The windows of the outer side aisle would at least suffice for the lighting of this portion of the structure in A B. The triforium was vaulted with pointed arches ramped up so as to clear the heads of the large high windows of the exterior wall at C D; the open arcade at E allowed these windows to light the nave in the direction of the dotted line D F, the clerestory let light upon the vaulting, and the flying buttresses resist the thrust of the great vaults. The exterior of this vast edifice (Fig. 17) leaves nothing to be desired: it is majestic, full of unity, and easy of comprehension; but the interior exhibits many faults of proportion (Fig. 18): the aisles are not only low and crushed in appearance, but they are too equal in height to the arches of the gallery; the naked wall above these appears heavy and blank, and is miserably pierced by the clerestory windows whose heads are lost in the groining of the main vault. It seems as if its constructors hardly knew how to finish an edifice commenced on so vast a plan and so largely conceived.

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[*] Dictionnaire raisonné de l'architecture Française du XI. au XVI. Siecle, par M. VIOLLET LE DUC, Architecte du Gouvernment, Inspecteur-géneral des Edifices Diocessains. 10 vols.; 8vo.; Morel, Paris, 1854—1868.

It has frequently been asserted that some deep occult symbolism pervaded the ideas of the architects of the middle ages, and that this impelled them to raise such high and lofty naves, but a reasoning examination of their works leads to an opposite conclusion. Breadth and height were structural sequences, and we find their endeavours taking the direction of reduction rather than of increasing the height of their edifices. Common sense ruled, and therefore they did good work and begot a living art. If we examine the section of Notre Dame at Paris (Fig. 16), we shall see that a less height could not have been used; in fact, the building is as nearly as possible equal in height and width,—a proportion common to all times and all peoples. In their efforts to bring down the height of their buildings the architects of the early half of the thirteenth century began to abandon the gallery over the side aisles—a legacy of the old Roman basilicas which impressed itself almost indelibly on the buildings which succeeded them.

PHILOSOPHY OF THE SOIL PIPE.

WHEN human beings are constrained to live closely in places not prepared for their reception, as in camps, the want of drainage soon begins to be felt, and the putrescent fermentation of animal deposits occasions disease of the class termed zymotic. Wherever dwellings are so situated that the refuse, especially the liquid refuse, cannot be freely carried off, noisome exhalations are emitted, and the air is rendered poisonous. Wet weather is not less wholesome than dry. Wet seasons are, in fact, accounted the healthiest; but a foul, wet soil is a source of danger, insidious and deadly. Open sewers are notoriously baneful; cesspools are but pits of corruption at the best, and when open, simply yawning and devouring graves. Running waters are of sanitary value when pure, and to keep them from pollution is a charge of national concern. Foul waters are best removed rapidly, unseen, unsmelt, through covered channels. London depends equally on her river and her drains. The Thames brings the wealth of commerce, but without sewers she would be uninhabitable. The contrast between modern and ancient London is remarkable. The aspect of the open flood does not more widely differ from the darksome streams beneath the earth. She is now an example of cleanliness and health, while the devastating plagues of old represent so many epochs in the history of filth. The Great Fire did in a day or two the purifying work of centuries. It was truly, as Dryden termed it, a "chymick flame." It separated the city of the past from that of the future, and, tinctured with a saving incense, came like an incorporeal priest between "the dead and the living, and the plague was stayed."

From this wide and general view that concerns sewers and public management we may turn to the drains of houses. They constitute an expedient whose city origin can scarcely be doubted. It is in cities that the inconveniences of neglect are augmented, and the penalties in form of scourging diseases intensified. In many parts of England there remains a wholesome abhorrence of drains within the house; and in London no class of houses is so healthy as those habitations of moderate scale that have all the conveniences situated externally. It is in domestic edifices of a superior grade that danger is chiefly to be feared. The sensitive habits of the upper classes lay them open to many forms of attack, and expose their dwellings to many pernicious agencies from which their less fastidious neighbours with smaller houses are altogether free. The complete residence must have cisterns, sinks, baths, and water-closets at every turn, while for each point of supply there must be a corresponding point of discharge.

But it is only necessary to transcribe a description to be met with in "A House for the Suburbs." "The whole waste of the house is conveyed to the drains by a large upright tube called the soil pipe. It is subject to no great stress, and is not particularly strong; but being virtually a continuation of the drains to the upper part of the house, it is very important that it should be air-tight. In a case where no branches were required, I had the drain pipes continued up to the gutter to receive the rain water. It is the soil pipe and connected apparatus that more than anything else fill houses with foul air. The pipe being in direct communication with the drains, is a receptacle for their vapours, and these being in part composed of hydrogen, the lightest of all known substances, are exceedingly buoyant. Every inlet from the soil-pipe to the house may be carefully trapped, but traps are not always effectual, and the subtle fluid too generally escapes with its charge of pestilence. It is only necessary to think of the quantity of atmosphere a single grain of musk will affect to judge of miasmatic consequences from continuous, though minute, doses of poisonous air. This source of disease is obviously peculiar to houses of several stories, with appurtenant internal conveniences; and great loss of health is, no doubt, the result of a mere oversight in the contrivance of these accommodations. The apparatus of a closet is sometimes almost as intricate as the movement of a chronometer, and yet avails but little; nor can it be otherwise, while the great defect remains unperceived. The volatile pent-up fluid requires—indeed, insists upon—an outlet, and, failing any other vent, pollutes the house. It would surely be well, therefore, to prepare an innocuous exit for so agile a foe; and this can be done with little trouble or expense. It is only requisite to carry the soil-pipe to the roof, higher than, or at a distance from, any windows there, and leave it open, so that in many cases it will serve also for a rain-pipe, as in the instance already adduced. This plan was followed at the barracks of the Commissionaires, in the Strand, and I have the testimony of Captain Edward Walter, the patriotic founder of the corps, as to the capital results. 'Although,' says this officer, 'the entire space allotted to each man is much less than that recommended by the Army Sanitary Commission, we have a much less average of sickness than any regiment in the service, and not a single case of fever has occurred.' There is no modern discovery about it, as will be seen by the next passage. "It was certainly with something like the pride and hope of an inventor that I put forward a project which had taken much time to mature and simplify; but all claim to novelty was destroyed by the subsequent perusal of a small volume by Sir Henry Wotton. A century and a half ago, when that book appeared, water-closets were unheard of; but upon the expediency of ventilating house drains it is explicit and conclusive. Sir Henry says, 'Touching conduits for the suillage and other necessities of the house (which how base soever in use, yet for health of the inhabitants are as considerable, and perhaps more than the rest) I finde in our Authors this counsell—that Art should imitate Nature in these ignoble conveyances, and separate them from sight (where there wants a running water) into the most remote and lowest and thickest part of the Foundacion; with secret vents passing up the walls, like a tunnel, to the wilde Aire aloft, which all Italian Artizans commend for the discharge of noysome vapours, though elsewhere, to my knowledge, little practised.'"

Commencing with an air-trap next the sewer, the glazed stoneware tubular drain-pipe of almost universal employment may be extended any distance within the house. "Junctions" should be inserted where pipes are to be brought down, and all the joints must be carefully stopped. The fewer pipes the better, and a single soil pipe will serve for any number of closets in the same pile, that is to say, so nearly above each other as to admit of funnel pipes for carrying their contents into it. The more it is used, the longer will it probably remain serviceable, as frequent washings prevent the deposit, that when allowed to dry and harden, contracts the bore. Not a single trap now used is to be omitted. Every passage for the sewer gas into the house is to be protected; but the one great principle inculcated is that, after all the guarded points have been passed, a free exit may be found at the top.

ARCHITECTURAL ASSOCIATION.

THE annual general business meeting of this Association was held on Friday evening last at No. 9, Conduit-street, W., Mr. T. H. Watson, President, in the chair. Messrs. James Tillet, F. Pringle, J. W. Munt, and W. W. Robertson were elected members. On the motion of Mr. B. A. Paice, secretary, seconded by Mr. W. L. Spiers, the best thanks of the Association were given to Mr. G. G. Scott for his kindness in allowing the members to visit the works in progress at the St. Pancras Hotel, in connection with the Midland Railway Station. Mr. Paice also announced that on Saturday, the 20th inst., a visit would be paid to a new Convalescent Hospital now in course of completion at Stepney, and to Mr. Brooks's new Church at Plaistow.

THE ARCHITECTURAL CONFERENCE.

Mr. Paice read a letter from Mr. Eastlake, the Secretary to the Royal Institute of British Architects, respecting the forthcoming Conference of Architects, and requesting that the subject should be brought before the members of the Association, with the view of securing their co-operation in the scheme. The letter stated that the Council of the Institute were desirous that delegates from the Association should attend the Conference, and would be glad to receive the names of the delegates who might be appointed, as well as any suggestions which the Association could make as to the conduct of the Conference.

Mr. Lacy W. Ridge suggested that the matter should stand over till the next meeting, when the Committee, having discussed the matter, would probably be in a condition to advise the members whether delegates should be sent to the Conference. He thought that the general body of the members was not sufficiently well versed in the subject to decide there and then whether delegates should be appointed.

The **President** pointed out that the time was short, as the Conference commenced on the 22nd inst., and it would therefore be too late to leave the appointment of delegates to the next meeting. He thought that the Association could hardly, with any good grace, refuse to send delegates, in response to the letter from the Institute. The coming Conference was an attempt on the part of the Institute to carry out a scheme that the Association had in a great measure previously pledged itself to in connection with the Architectural Alliance. It was highly desirable that architects should by some means be brought together for the purpose of interchange of ideas on professional matters, and this would result beneficially not only to the persons taking part in the Conference, but to the profession at large. He thought, therefore, that the Association would do well to appoint delegates to represent it at the Conference. Perhaps the best plan for the meeting to adopt would be to pass a resolution that delegates be sent, leaving it to the Committee to select the delegates.

Mr. **J. Douglass Mathews** proposed a resolution to that effect, as he thought that all other architectural societies would have representatives at the Conference, whether delegates or not.

M. **J. T. Perry** seconded the motion.

Mr. **Lacy W. Ridge** said he had no objection to urge against the adoption of the resolution. He thought the only difficulty that might arise was that the Association was already more or less committed to the Architectural Alliance, and he thought it possible that many of the members might object to send delegates from their body to what might in some measure be characterised as a rival scheme to that which they had already pledged themselves to; but as Mr. Mathews, himself an officer of the Alliance, had proposed the resolution, he supposed it was all right.

The motion was then put, and unanimously carried.

The Librarian having announced several additions to the library, the meeting proceeded to discuss the relations of the Association with

THE ARCHITECTURAL ALLIANCE.

Mr. **J. Douglass Mathews** said that it was usual at the business meeting of the Association for its delegates to the Alliance to make a report. The delegates, had, however, very little to submit to the meeting beyond what was mentioned in the minutes of proceedings of the Alliance, then in the hands of the members. Mr. Mathews, after referring to a letter which he addressed some time ago to the various provincial societies seeking their co-operation with the Alliance in interesting provincial architectural students in the Voluntary Architectural Examination, spoke of the President of the Institute's suggestion in his inaugural address as to the desirability of the amalgamation of the Alliance and other architectural societies with the Institute. He (Mr. Mathews) however, could not see that such a change was, for the present, at any rate, desirable. The Alliance was an independent body, and its great advantages were that it was the means of bringing together the representatives of various architectural societies throughout the kingdom, for the discussion of matters of professional interest, and this had not hitherto been done by any other body. Since this proposal had been made by the President of the Institute, that body had taken upon itself to hold an Architectural Conference, which, if successful, was to be continued annually, and which might probably make it a matter for the consideration of the societies constituting the Alliance whether the latter body might not be dissolved. He did not think, however, that in the discussion of the question the Association should take the initiative in proposing its dissolution, for although it sent twice as many delegates to the Alliance as any other of the constituent societies, it was in reality the least interested of any one of them in the Alliance. He thought that the annual gatherings of the Alliance had been productive of much good, inasmuch as the provincial delegates had been made thoroughly acquainted with the work accomplished by the Association; and the Association was looked upon in the provinces as what an architectural society should be, and was copied in many respects. With respect to the coming Conference, it had been established by the Institute with the same end in view as that which had prompted the Architectural Alliance to hold similar annual gatherings for the last seven or eight years, only it was thought that the Institute could, by reason of its position as the chief professional society in the United Kingdom, carry out the project more completely. He thought it was much better that a strong body like the Institute should take up the matter, and work it thoroughly, for he was no advocate of rival societies having the same ends in view; but, at present, he did not think that the Alliance should be allowed to die out or surrender itself indiscriminately into the hands of the Institute. The Committee of the Alliance had been asked to send representatives to the Conference at the Institute, but they had not seen it in their power to comply with the request, inasmuch as the annual general meeting of the Alliance did not take place until next month, and the Committee did not feel at liberty, without being deputed by the whole body of the Alliance, to take any part in a scheme which would virtually cut the ground from under the society of which they were officers. He did not think that the Institute had treated the Alliance in exactly the right way; for, before determining to hold this Conference, the Institute ought, in common courtesy, to have consulted the Alliance, which was in the field so long before the Institute condescended to take up the matter, especially as the Institute had given the Alliance the credit of being the pioneers of this movement. The Alliance meeting would, therefore, take place this year as usual. Before it was held, however, the Conference at the Institute would have passed over; and, in view of what might or might not be achieved by the Conference, it would be for the delegates of the societies constituting the Alliance to determine whether the latter body's annual gathering would be necessary or not for the future, and whether, in fact, the Architectural Alliance would thenceforth have any *raison d'être*. Probably, if the Conference at the Institute was a success, the Alliance would be dissolved. He read a letter which he had sent to the various societies composing the Alliance, in which he had drawn attention to the subject. In this letter he reminded the societies that at the last meeting of the Alliance the following resolution was passed, viz.:—"That the Royal Institute of British Architects be invited to meet the Delegates of the Architectural Alliance, consisting of the following allied societies (stating their names), once a year at their annual meeting." This was communicated to the Secretaries of the Institute, and in reply a letter was received from them dated the 14th February, stating "That the Council of the Royal Institute of British Architects feel unable to comply with the proposal, but they have under their consideration a scheme which it is believed will realise all the objects sought to be obtained by the Architectural Alliance." On the 22nd April the following letter was sent to Mr. Mathews, by the Secretary of the Institute:—"Dear Sir,—The Council of the Institute having decided to hold a General Conference of Architects towards the latter end of next month, in accordance with the plan already announced by advertisement, I am requested to beg that, as Honorary Secretary of the Architectural Alliance, you will attend the Conference yourself, together with three other members of that body who may be selected to represent officially at the several meetings on the 22nd, 23rd, and 25th of May. In making this proposal the Council desire to express their full acknowledgment of the fact that the 'Conference' scheme originated with, and was suggested by the Architectural Alliance, whose members for some years past have exerted themselves with praiseworthy zeal to promote by their co-operation the objects which the Institute now desires to maintain by the establishment of an Annual Conference. Further particulars of the scheme as at present arranged are now under consideration, and will be forwarded to you in due course." That letter was followed by another on the 24th April, in which Mr. Eastlake said:—"I regret having omitted to explain in my letter of the 22nd inst., that the four members of the Architectural Alliance (including yourself) who may be selected for the purpose, are invited to become members of the Committee appointed to carry out the scheme, and requesting the names of the members of the Alliance, who have been selected, in order that they may be at once added to our Committee List." He wished it to be understood that, although he had accepted office on one of the Committees for arranging the Conference at the Institute, he had done so as a private member of the Institute, and not as an officer of the Alliance. Personally, he thought that the Conference, if successful, would greatly benefit the profession, and aid in conferring on the Institute the prestige which, as the foremost professional society in the kingdom, it ought to possess. He therefore suggested to the members of the Association that they should leave it to the delegates, whom they were about to re-appoint, to take whatever course they thought advisable as to the continuance or dissolution of the Alliance.

Mr. **Phene Spiers** said it had always been the opinion of the Committee of the Association that whatever classes were started by them in connection with the Association were started, not in opposition to any others that might exist, but in order that the members might have the best means of instruction at their disposal; and, whenever at any time the Institute had expressed a wish to take up any movement started by the Association, no objection had been raised if it was thought that the Institute could do the work better. He felt sure that if the status of the profession was to be raised in the eyes of the public it must be by means of the position held by the Institute. Mr. John Papworth, in a letter written a short time ago, had stated that the Association was doing the Institute harm. Well, if so, it was the fault of the Institute. The Institute ought to have taken up what the Association was now doing ten years ago. If the Alliance had achieved nothing else, it had forced the Institute to undertake to hold an annual Conference of Architects. He knew personally that it was entirely due to the efforts of the Alliance that the Conference had been decided upon. From the time that the Institute had taken the matter up it had put forth all its energy to make the Conference a success in every way, and he had great confidence in the issue. And, even if the success of the Conference was such as to render unnecessary the annual Conference of the Alliance, the latter body need not be absolutely dissolved, but might be kept up nominally by retaining its officers.

On the motion of Mr. Lacy W. Ridge, seconded by Mr. J. S. Quilter, honorary secretary, the thanks of the Association were tendered to its delegates at the last meeting of the Alliance, viz., Messrs. T. Roger Smith, T. M. Rickman, J. Douglass Mathews, and R. Phené Spiers.

Mr. **Lacy W. Ridge** had great pleasure in proposing that the same four gentlemen should be re-elected to represent the Association at the Alliance at the next annual meeting, because he thought that two of them had expressed the extremely sensible view that if it was found that the Conference proposed to be held at the Institute should answer purposes for which the Alliance was established, the Alliance should cease to exist. He believed that the curse of the architectural profession, especially in the metropolis, was the great number of societies existing, and therefore he should be very glad to learn that the Alliance was a thing of the past, if its work was done more effectually by the Institute.

The President thought the Association was to be congratulated, as one of the societies comprised in the Alliance, that they had been so far successful in realising the objects for which the Alliance was established. At the same time, it was worth consideration whether the Alliance might not still continue to exist with advantage to the profession.

The motion before the meeting was then put, and unanimously adopted.

THE ARCHITECTURAL ART CLASSES.

The **President** then directed the attention of the members to the financial condition of the Architectural Art Classes held at the Architectural Museum, Westminster. He said that although they had been established at considerable cost of labour and money, they had not been so successful as had been anticipated. Since the classes had been removed from the Association's rooms to Westminster, there had been a great falling off in the attendance, although the character of the instruction given had been greatly improved in value. It was highly essential to the welfare of the members of the Association that these classes should be carried on, and the junior members of the profession should do their best towards supporting them, the senior members having already done their part. The fees were fixed as low as was compatible with keeping the affair out of the category of charitable institutions; but it was anticipated with an increased attendance, that the income would always meet the necessary expenditure, but of course in starting, a great outlay had to be made for furniture and fittings, models, &c. This had been a great drawback, and in order to strengthen the funds of the Classes, it was proposed to start a subscription list amongst the members of the Association—those who were most benefited by the Classes—fixing the maximum subscription at half-a-guinea, and it was hoped that the response would be as liberal as had been the response of the senior members of the profession to the appeal on behalf of the Classes.

Mr. **Lacy W. Ridge**, (Secretary of the Art Classes), also spoke at some length on the same subject, after which

Mr. **E. C. Lee** read a paper "On Canterbury," an abstract of which will appear in next week's **Building News**. After a brief discussion on the paper, the meeting terminated.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

A GENERAL meeting of this society was held on Thursday week at the hall of the Leathersellers' Company, when Mr. W. H. Black delivered an interesting address upon the charters, records, and history of the company. The records went back as far as 1472, and the company was granted royal letters patent by Henry VI. There was no incorporation. The Rev. T. Hugo, Vice-President, then read a well-prepared paper on the Hospital of Le Papey, Bishopsgate, showing how it was formed, and illustrated the Christian spirit and worldly sagacity of its promoters. After inspecting a collection of drawings by Mr. J. G. Gardner, illustrative of the locality and of the adjoining church, the members proceeded to the church of S. Andrew Undershaft, where an address was delivered by Mr. Black upon the celebrated painter Hans Holbein, as a parishioner of S. Andrew. In the course of his remarks, Mr. Black contended that some monument should be erected in the parish to the memory of so great a man as was Holbein. A paper was also read by Mr. W. H. Overall upon the records of the church. The company next proceeded to the church of S. Peter's-upon-Cornhill, where the Rev. R. Whittington read a paper upon the history of the church and the archives of the parish. In the evening the members dined at Kennan's Hotel, Cheapside.

LONDON CRYPTS.

THE recent destruction of the ancient crypt at the Aldgate end of Leadenhall-street (commented upon at the time in the BUILDING NEWS) was a piece of Vandalism which archæologists were loud in deploring; but, as the *City Press* points out, they may find some comfort in the fact that there yet remain in the City several of these interesting specimens of the architecture of bygone ages. The principal crypt is that under the Guildhall, which is rich in its antiquarian associations. It is a portion of the ancient hall, erected in 1411. S. Bartholomew's crypt, in Bartholomew-close, is (or was until recently) in good preservation; it is very extensive. There is a tradition that there was once a subterranean passage extending from here to Canonbury. In excavating for the foundations for the new offices of the City of London Union, shortly to be erected in Bartholomew-close, some interesting remains will probably be found. The crypt under Bow Church, Cheapside, is said to be of the time of William the Conqureror. Mr. Timbs says Wren thought it to be of Norman workmanship, but was mistaken. There is a crypt of somewhat more modern date—of the fourteenth and sixteenth centuries—under Garroway's Coffee House, Change-alley, Cornhill. It is of ecclesiastical character, and has a piscina. There are several groined arches in fine preservation. It is believed that the present floor is not the original one, from the circumstance that a portion of it recently gave way. In addition to S. Paul's Cathedral, the sites of other crypts now in existence in the City are Lamb's Chapel, Monkwell-street; Leathersellers' Hall, S. Helen's-place; Merchant Taylors' Hall, Threadneedle-street; and the Church of S. Mary Aldermary, Bow-lane. There is also a very fine crypt at S. John's Gate, Clerkenwell.

THE NEW CHARTERHOUSE.

THE buildings now in course of erection for the terhouse School are fast approaching to completion on the high ground above Godalming, near Guildford, where a site of about 70 or 80 acres has been purchased by the governors for the purposes of the school, the rest of "Sutton's Hospital" remaining, for the present at least, in London. The buildings stand on a level spot of table land, commanding fine views over Surrey and Sussex, with sloping ground on all sides, and surrounded with pleasant woodlands. They will consist, when completed, of an irregular group of two quadrangles or courts, with hall and chapel, and school and lecture rooms *en suite*. They are in the Gothic style of the fourteenth century, with high pitched roofs and lofty towers at the centre and principal angles. The architect, Mr. P. Hardwick, has so contrived the arrangement of his buildings that they all have a cloistral intercommunication from end to end, so that the boys, to whatever house they belong, may all reach the chapel, hall, &c., without going into the rain. The centre part of the building is devoted to the residence of the foundation scholars or gown boys, the head master's and the second master's residences standing on either side. The dormitories have a double row of windows, affording light and ventilation, and they are subdivided into "cubicula," after the ancient and now generally revived fashion. Adjoining the dormitories are "studies" for the upper boys, and a suite of rooms for the matron and for those boys who are on the sick list temporarily. The same arrangement, with some slight modifications, is repeated in the two other masters' houses. These are now almost built, the walls being raised to their full height, and the timbers of the roof being for the most part placed in position. The walls of the school and lecture rooms are not so far advanced; but it is confidently expected that the entire building—so far as it is intended to complete it at present—will be roofed in within less than three months, and that the school will be transferred from London to these "green fields and pastures new" about Easter in next year. The chapel will be completed only gradually, beginning from the east end; the portion now being erected will accommodate from 250 to 300 boys, but when carried to its western extremity it will hold 600 without inconvenience. It is hoped that the means at the disposal of the governors will enable Mr. Hardwick speedily to erect also an infirmary at a short distance from the school buildings.

CONFERENCE OF ARCHITECTS.

WE beg to remind our readers that the General Conference of Architects will be opened at the rooms of the Institute on Monday, the 22nd inst., at 2 p.m., by an address from the President, T. H. Wyatt, Esq. On the following day papers will be read at 2 p.m., on subjects connected with professional practice and education; and at 8 p.m. on archæology and art. On Thursday, the 25th inst., the section of construction and science will commene its sitting at 2 p.m. Discussions will be invited after each paper is read. Architects who are desirous of affording information upon any of the above subjects should at once communicate with the Hon. Secs. of the various sections, or with the Secretary of the Institute.

ROYAL ARCHITECTURAL MUSEUM.

THE report of the Council of this institution for the past year has just been issued. In it the Council state that though the generous aid of the friends of the Museum the institution is free from the mortgage debt with which it was encumbered, and that the annual resources of the Museum can now be devoted to the promotion of its intentions. At the date of the last report the debt was £1,000. Donations, including £25 from the Goldsmiths' Company, enabled the Council to pay off £100, leaving £900 to be raised within the four years over which the morgage deed extended. Then came the offer of £150 from Sir William Tite, on condition that the remaining £750 should be subscribed for within one month. Not only was the condition complied with, but the Council believes that there will probably be a surplus sufficient for providing articles of furniture, fittings, &c., for the use of students, in which the Museum has hitherto been sadly deficient. By an arrangement with the Committee of the Architectural Art Classes, established in the Museum buildings, the upper gallery has been railed round, and access to it obtained by the erection of a permanent staircase from the floor beneath, thus rendering the whole of the Museum accessible to visitors, and providing increased space for specimens. The Council last year endeavoured to obtain donations or loans of books towards the formation of a Library useful to students and others attending the Museum. A list of desirable works was compiled at some trouble, and issued with an invitation to friends to give or lend any of the books mentioned, but the Council has received very little help in this matter. There is now a renewed desire for the formation of a Library, and the Council has now the means of providing proper fittings, &c., for the purpose. In May, 1870, the Members of the Working Men's Club and Institute Union were conducted through the Museum by Mr. Edward Hall, F.S.A., who, in conjunction with the Treasurer of the Museum, Mr. G. G. Scott, R.A., explained the value and characteristics of the various specimens. In February last Mr. Seddon lectured on the casts specially illustrating the history and principals of foliage and architectural ornament; and in March Mr. W. Burges on the casts specially illustrating figure sculpture and grotesques. The Council had been able to assist in a slight degree the Architectural Examination Class formed at the Royal Institute of British Architects by temporarily placing at its disposal a selection of casts suitable for instruction in free hand drawing, and it is hoped that during the approaching Conference of Architects at the Institute the provincial members will visit this Museum, which will be open free to them on the occasion. The insurance of the collection, as well the building, against fire, has been effected with the Hand-in-Hand Office. The Museum is represented on the Commission for the International Exhibition in the person of its President (Mr. Beresford Hope), while its Honorary Secretary (Mr. Joseph Clarke) acts as its representative on the Committee of Selection for objects of Fine Art. The Council records with regret the loss, by death, of one of its Vice-Presidents and oldest and best friends, Mr. Philip Hardwick, R.A., and of its colleagues, Professor Donaldson, by friendly retirement, and Mr. Willement, by death.

ROCHESTER CASTLE RECREATION GROUNDS COMPETITION.

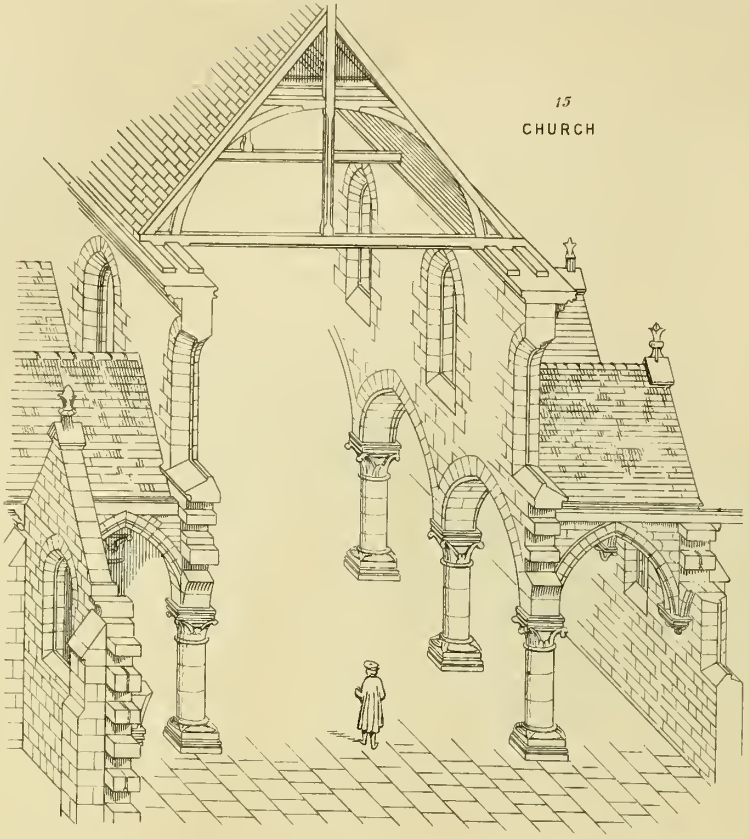
WE this week give an illustration of a design submitted for the above competition by Mr. A. Baker, architect, and Mr. W. Lee, landscape gardener. The view selected shows a portion of a terrace of dwelling-houses proposed to be built on the west side of the grounds, with the entrance gateway to the grounds occupying the site of the ancient entrance to the castle, a few remaining quoin stones of its angle turret forming part of a similar feature in the new gateway. In this design the highly interesting architectural associations of the ancient castle and its surroundings were taken into full consideration, which we regret to say was not the case with the majority of the forty-nine designs sent in, harmony with the modern esplanade rather than with the ancient castle being generally aimed at,

SIR WILLIAM POWELL'S ALMSHOUSES AT FULHAM.

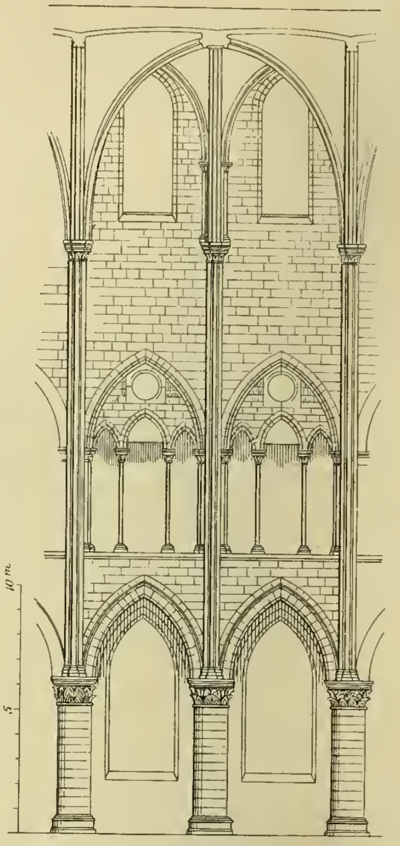
THE illustration which, according to a recent promise, we give this week of the Almshouses erected from the designs of Mr. Seddon at Fulham, represents the portion next the road, with the tower built to hold the general water cistern for the whole of the buildings, and a small room for a library in the first story, and the gas meter below. The entire structure consists of residences for twelve widows, arranged in pairs, each of which has one entrance doorway situated under a recessed porch. On either side of this is the bay window of a living-room. The porch is formed by an arcade of three arches from bay window to bay window, carried on corbelled piers. Another arch connects this bay window of this pair with that of the next, and thus the cornice above is continuous, as well, as the lean-to roof, which covers the whole arrangement of porches and bay windows, which are thus connected, and made into one feature. A staircase is carried up within opposite each doorway, and branches right and left to a bed-room over each living-room, lighted by the two-light traceried dormer windows seen in the lithograph. The material of the walling is a brown Yorkshire sandstone, with dressings of golden-coloured Camden limestone, and the columns of green sandstone. The roofs are covered with Broseley tiles, with terra-cotta ridge crests. The several down-pipes in the front are made into ornamental features. The three carved heads in the upper story of the tower represent Faith, Hope, and Charity, and blocks of stone are left in the panels below for figures of saintly women, with the Annunciation on the return face. In the gable next the tower is the inscription "God's Providence is our Inheritance." The doors are constructed of pitch pine, with ornamental panelling of bog oak and other woods. The site is a charming one, facing the picturesque church tower and churchyard at Fulham, and backed by the fine trees of the Bishop of London's grounds immediately behind.

The work has been executed by Mr. Wigmore, builder, of Walham Green, from the designs and under the superintendence of Mr. Seddon, as architect. The cost has been about £3,000, provided partly by the funds of the charity and sale of the old almshouses on another site which had fallen into dilapidation, and partly from subscriptions raised in the neighbourhood by the Rector, the Rev. R. Baker, and Mrs. Baker, for the special purpose that the work might be made more architectural than would be otherwise justifiable under the circumstances.

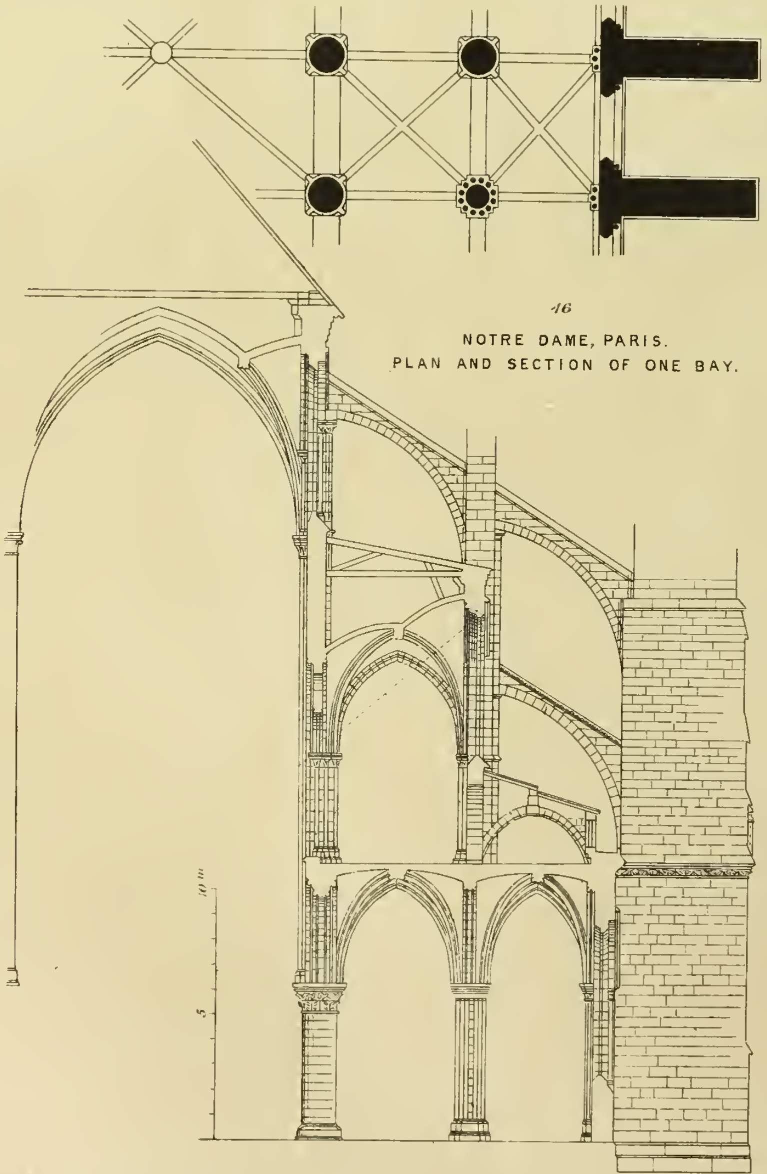
Some picturesqueness has been attained by the manner in which the structure has been arranged at the opposite end from that shown by our illustration. One pair of the residences has there been turned at right angles to the rest, so as to face the road and make the general plan an ∟ shape, and an archway in the angle leads through to the rector's garden beyond, and a laundry and washhouse for the use of the inmates has been provided at the corner thus left between the residences. A bay window, corbelled out from a flat pilaster to light the first floor of the end house, gives a pretty feature to complete the building there, where the gable end faces the churchyard.



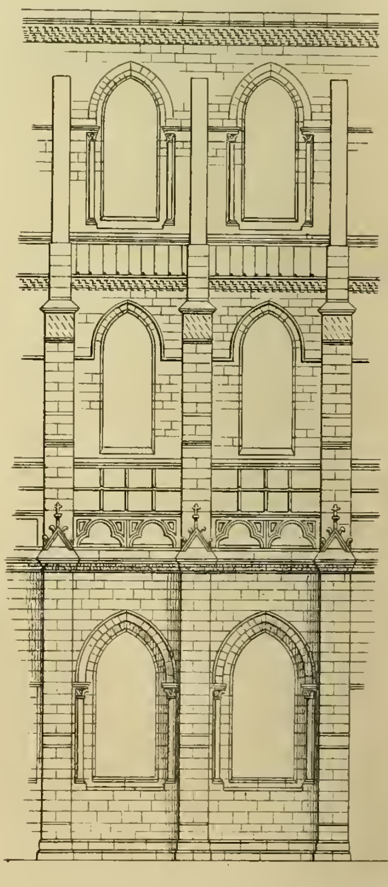
15
CHURCH



18
NOTRE DAME, PARIS.
INTERIOR ELEVATION OF ONE BAY.



16
NOTRE DAME, PARIS.
PLAN AND SECTION OF ONE BAY.



17
NOTRE DAME, PARIS.
EXTERIOR ELEVATION OF ONE BAY.

Printed by Whiteman & Bass

DETAILS, (FROM VIOLLET-LE-DUC'S 'DICTIONNAIRE RAISONNÉ DE L'ARCHITECTURE'.)

Supplement to the Building News May 12th 1871.

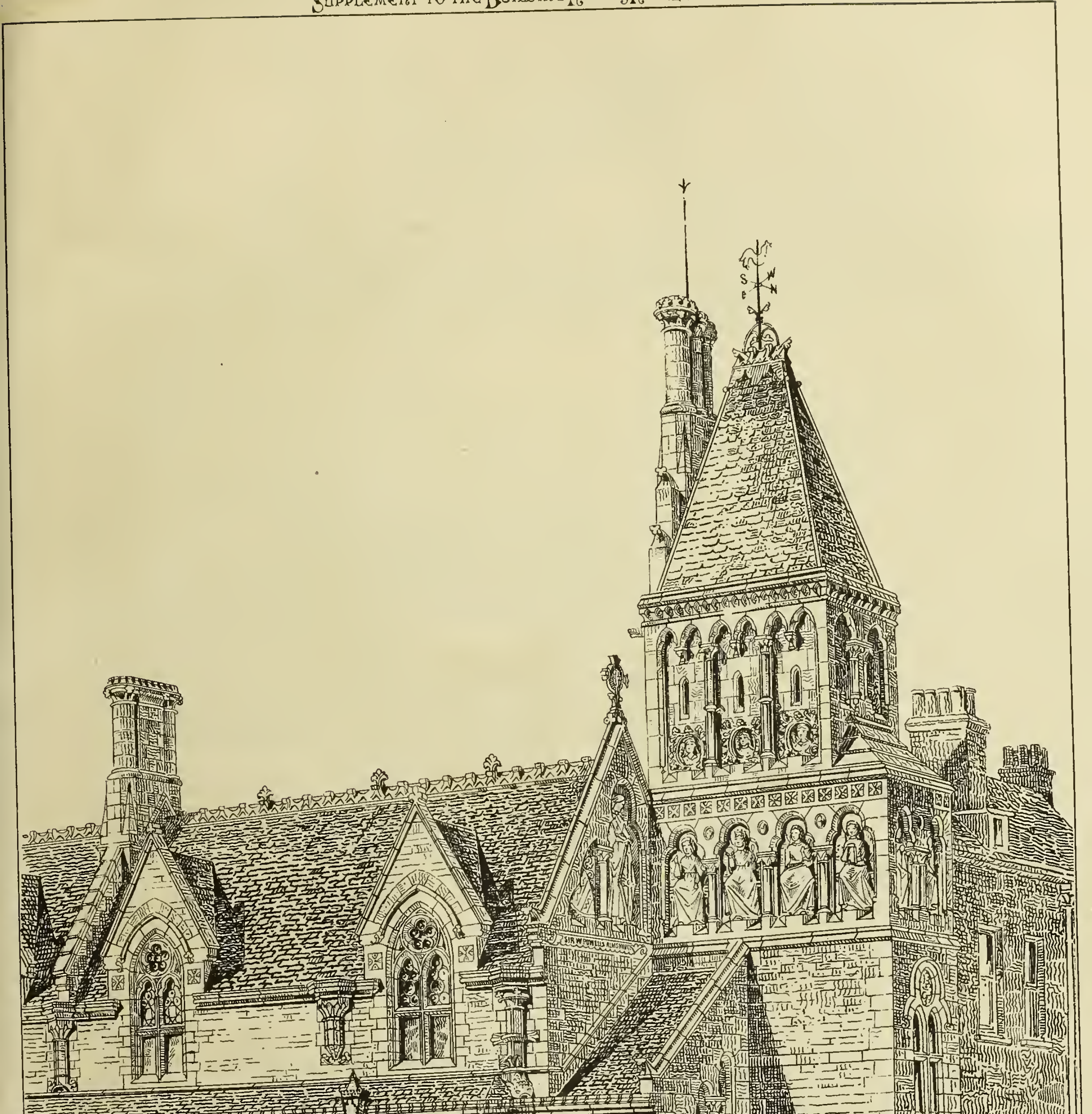


Photo-Lithographed by Whiteman & Bass London

ALMS HOUSES, FULHAM.

J. P. SEDDON, ARCH^{T}

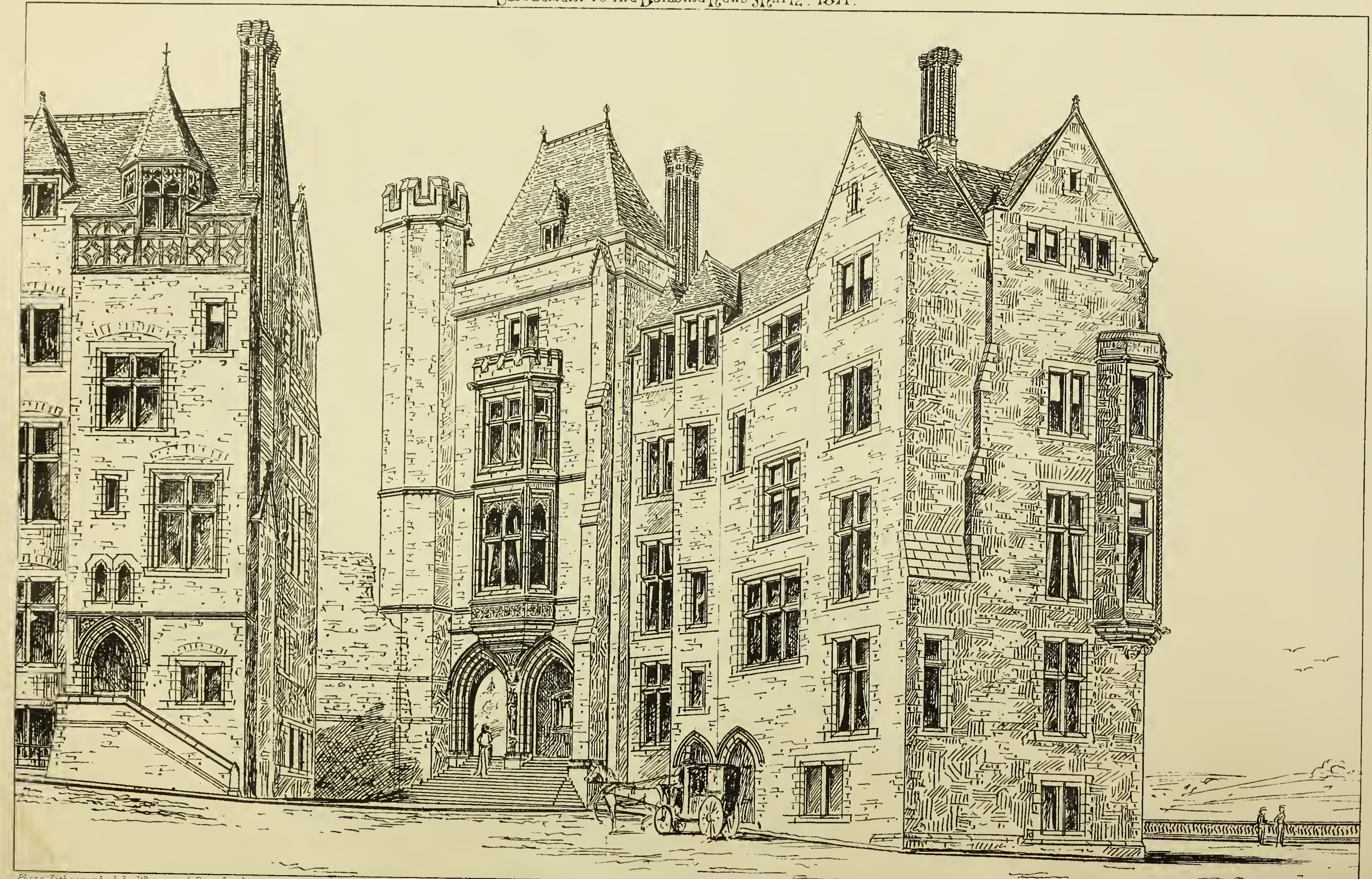


Photo-Lithographed by Whiteman & Bass London

COMPETITION DESIGN_ROCHESTER CASTLE RECREATION GROUNDS.

TERRA-COTTA AT THE INTERNATIONAL EXHIBITION.

THE authorities at South Kensington have done well in giving so much prominence on this, the first of a series of annual exhibitions, to terra-cotta—a material to which the Government builings there owe so much, and in furthering the introduction of which the late Captain Fowke, R. E., Mr. Godfrey Sykes, and the students of the Art Schools have done such good service. There is a certain shyness about all new materials which architects and builders are very long in overcoming, and although terra-cotta can hardly now any longer be called a new building material, its use seems to us to be still remarkably restricted, owing, doubtless, to certain prejudices and interests which have yet to be removed. The show of terra-cotta is upon the whole a good one, though the names of some of our leading manufacturers are conspicuously absent; foreign countries, as might be expected from the disturbed state of the Continent, do not come up to the mark.

It may be as well, perhaps, before referring to special objects in the exhibition, if we glance briefly at some of the leading features of the manufacture of terra-cotta, and point out a few general facts which may guide us in our subsequent consideration of the subject. The clays used in the preparation of terra-cotta may be divided into two groups or classes—viz., (1) those consisting of pure, or comparatively pure, silicate of alumina, which will stand the highest heat of the furnace and burn to a white or buff colour at very high temperatures, but remain nearly pure white if exposed to a moderate fire, and (2) of those which contain varying proportions of protoxide of iron or sometimes manganese, and small quantities of lime and magnesia, and which fuse at high temperature, but burn to various shades of red if the firing process is conducted at a more moderate heat. From these two classes of clays are prepared the red and white varieties of terra-cotta, though we may mention incidentally that some firms stain their white clays with a red colouring matter to produce a red body. Throughout the North of England and Scotland (we believe, without exception), the clays of the coal measures, technically known as "fire-clays," are used in the manufacture of terra-cotta. Many of these beds are extremely pure, and owing to their freedom from extraneous matters they produce an excellent article; but it seems to us, from a careful examination of all the principal manufactories in the North, that too little attention is devoted to the preparation of the clay, and consequently that the terra-cotta made from fire-clay can rarely compete, as far as the body and texture is concerned, with that which is made from a more carefully prepared mixture of clays by some of the firms nearer London. The preparation of the fire-clay consists merely in selecting the purer lumps, grinding them to powder, and after admixture with various proportions of previously-burned clay, called "grog," to counteract excessive shrinkage, passing them through a pug-mill to temper them ready for use. It is obvious that, in using a mixture of clays—say those from Devon or Dorset, or mixtures of these with fire-clay,—in order thoroughly to amalgamate and incorporate them, a very careful pugging will be required, even if they are not, as we believe is sometimes the case for fine ware, run into slip and mixed in the liquid state. A further advantage of the mixed material is that from the use of two or more clays, varying in composition, a more homogeneous and compact body is generally obtained, which is proved by the difference in the shrinkage under firing; and from such mixtures a more complete vitrification of the mass frequently ensues, owing to the presence, more especially in the Dorset clays, of a small percentage of the alkalies, which acts as a flux. The mixture of clays for the manufacture of terra-cotta has, however, some very serious drawbacks—namely, the danger there is that from carelessness in proportioning the respective quantities of each kind, differences may arise in the shrinkage and colour of the resultant terra-cotta during the progress of the work. Moreover, from the extra labour and care requisite in the mixing, the terra-cotta made from a mixture of clays can scarcely ever compete in price with that made from pure fire-clay. We cannot now go into any other manufacturing questions; we have already alluded to the shrinkage of clays, and we may add that, from the time it goes into the mould until it leaves the kiln, fire-clay terra-cotta shrinks on an average one and a-half inches in the foot; mixed clay terra-cotta from three-fourths of an inch to one inch in the foot; and red terra-cotta, owing to the more tender firing, only about three-eighths of an inch in the foot.

We may now pass on to notice briefly some of the more important objects in the terra-cotta gallery, which is situated under the eastern arcades of the Horticultural Society's Gardens. As we enter the gallery from the south we find some statues by Boni, of Milan, in red terra-cotta, very uniform in tint, but crude and unpleasant in colour—a fault, by the bye, common to nearly all the red terra-cotta in the building. Signor Boni's figures are apparently good from a manufacturing point of view; but if they are made on the same principle as was the terra-cotta he supplied for many of the new buildings at Milan—namely, a thin surface veneer of a finer material over a coarser body beneath, which veneer was, when we were last in Milan, rapidly scaling off—we must most unequivocally condemn them. The practice of using a face of a more expensive body over a coarser ground is most reprehensible, as the difference in the expansion and contraction of the two substances in the course of a few years causes hair cracks, which retain moisture and speedily effect the decay of the block. In the corner of the arcade is a very good column by E. March and Sons, of Berlin, Prussia, the surface of which is all that could be wished, and which, though light in colour, seems from the touch to have been well fired. Ascending the steps, we see on the right and left two vases and pedestals, by J. Stiff and Sons, of Lambeth. These are noticeable from having the name and some of the enrichments in a red body on the buff ground; as the letters are small, the difficulty with regard to shrinkage which the use of the two different kinds of clay superimposed frequently involves has probably been avoided. Immediately before us, on the landing, is the Amazon vase, made by Messrs. Doulton and Co., of Lambeth. This is a monster piece of terra-cotta, rather weak in design, and with little to commend it except its success in point of manufacture. Of course, to make such a large vase, and to pass it through the kiln, presents many difficulties to the the manufacturer, and for having so well overcome these difficulties we must give this firm the highest praise. They seem to aim rather after producing these unusually large pieces, for we find outside in the garden a fountain in terra-cotta, some of the parts of which are of an astonishingly large size, and the colossal figures modelled by Mr. Ball, for the new Lecture Theatre at the South Kensington Museum, were, if we mistake not, fired at Messrs. Doulton's works. Messrs. Doulton, however, come out strongly at the Exhibition not only in fire-clay goods and terra-cotta, but in stone-ware of all kinds—they are, in fact, by far the largest exhibitors in Class VIII., and their goods are collectively of first-rate quality. Mr. James Pulham, of Broxbourne, is also a large contributor, and sends some well-executed terra-cottas, for the design of which, however, we cannot say very much. He seems to sacrifice the freedom of the design in order to obtain finish and sharpness, and to have cleaned and polished up the enrichments, to make them resemble stone carvings. This aiming after stone is the great error of many of our manufacturers; not only do they underburn their ware to keep it light in colour, and thus expose it to the danger of rapid decay, but they clean and scrape off all the vitrified surfaces after firing to take away any little irregularities which may have presented themselves; and even before going into the kiln the outer skin of the clay, which has formed in drying, is often removed. After the loss of this film no terra-cotta ever gets such a good face as it would have done if it had never been touched. It is difficult to account for this, but it may be due to the drying out of certain alkaline salts in the clay which tend to form a species of efflorescence on the surface, and these salts by acting on the silicates slightly vitrify the exterior of the block. One manufacturer in this year's display seems to have made a great point of thus mutilating his terra-cotta, and has invented for this poor scraped material a grand new name "Glypto-terra-cotta." Mr. George Smith, of Coalville, has a stand of very light coloured, porous-looking ware, some pieces of which rather remind one of overburnt loaves which have been carefully rasped. He has succeeded wonderfully well in doing away with all the freedom of outline which the plasticity of the clay affords, and in effacing from his ware every appearance of what it really is, the general effect of the work bearing a faint resemblance to indifferent stone carving. He states in a very conspicuous placard that it is one-third less cost than stone, which we should doubt, and that it is imperishable, which needs further confirmation. We must, however, congratulate Mr. Smith upon his pattern-work, which is something far superior to the general run of such productions.

The Watcombe Terra-cotta Clay Company have some carefully made vases, flower boxes, and architectural enrichments. The texture of this clay is very good, but it will not stand much fire. We have seen some specimens of this material burnt in a white terra-cotta kiln which were almost blackened by the heat, but if the temperature is not too great a dark red and very hard terra-cotta may be produced, which, however, appears to shrink very considerably, and to be liable to twist. The terra-cotta exhibited by this firm will not bear our test of hardness—namely, the point of a penknife, and has therefore not been, we consider, sufficiently fired for out-of-door work. It was stated at the time this was first introduced that it was so pure as to be capable of being used for the finest description of pottery without further preparation, a statement which has not been justified by experience; the inlaid vases and flower-pots shown by the Watcombe Company, which present the smoothest possible surface, have doubtless been made from slipped clay. For ordinary earthenware of the finer sorts there is only a very limited market for good red clays, and for architectural uses there will, we think, never be a large demand for red terra-cotta.

The excellent red bricks shown by Messrs. R. and N. Norman, of St. John's, Hurstpierpoint, although they do not come within the province of our present paper, displayed as they are in the same compartment with some excellent Prussian red terra-cotta, seem almost to provoke an inquiry into the difference between the two materials. The simplest solution of this question would be by maintaining that the terra-cotta was a vitrified brick, an assertion more easily made than proved. Very little of the terra-cotta in the Exhibition can fairly be said to be vitrified to any great extent, and the main difference in the case of the red ware between the terra-cotta and the brick consists in using for the latter a more silicious clay, and burning it at a lower and steadier temperature. Both the colour and texture of Messrs. Norman's bricks is, we think, superior to that of the best red terra-cotta, and if we could feel certain of both articles being of equal durability, we should not hesitate to select the brick.

Those who only know terra-cotta from the ordinary run of specimens shown as manufacturers' *chef d'œuvres* at Exhibitions, will scarcely conceive what beautiful colours it will assume when properly fired. Some Austrian terra-cotta made by M. V. Brausewetter, of Wagram, is to our mind admirable in point of colour; and that shown by Messrs. Gibbs and Canning, of Tamworth, pleases us the best among the English examples. The danger of firing for the dark buff colour is the difficulty it entails of making all the blocks uniform in tint, and the great expense in fuel it involves when using refractory clays, the difference in tint between pale straw colour and buff necessitating often twenty-four hours' longer firing. The contraction, of course, is also very much greater, and the tendency to twist or rack is increased. All these considerations weigh greatly upon the ultimate cost of the material, and cause the manufacturer to hesitate before venturing upon the dark coloured terra-cotta. We must not forget, too, that many people prefer the lighter coloured ware, on account of its fancied resemblance to stone. There is one fact we may be sure of in using the richly coloured terra cotta—namely, that it has at any rate been well fired.

There are so few actual novelties in this Exhibition that we must make the most of those we find. Thus, Messrs. Gibbs and Canning send some hexagon pots of very thin light terra-cotta, which they have introduced for the purpose of filling in the spandrils of vaulting. These seem to us to be admirably adapted to the purpose; but might they not, with good results, be gradually increased in size from top to bottom, so as to make them of voussoir shape in every direction? This would, we think, greatly increase the facility with which they might be fixed, and improve the key. This firm also send some specimens of their glazed terra-cotta, which they term "Della Robbia ware:" this consists of the application of colours in the form of enamels to the biscuited terra-cotta; if this can be done cheaply, it bids fair to compete favourably with the now very expensive majolica ware. Messrs. March and Sons send a large tablet decorated with arabesques, the patterns being formed by incising the ornament into the unburned clay and filling up the incisions with a dark chocolate body. Mr. Pulham and Messrs. Doulton make use of red clay to enrich various ornamental objects made of the white terra-cotta; and Messrs. J. Stiff and Sons send some arch blocks very successfully inlaid with stained bodies in various colours. We must put off for another article our review of the remainder of the terra-cotta, after which we hope to conduct our readers over the wonderful collections of pottery and porcelain in the adjoining gallery.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. G. G. ZERFFI delivered the twenty-ninth lecture of this course at South Kensington on Tuesday afternoon last. He said that the notion that the Kelts, Britons, Scandinavians, and Teutons had possessed no art at all at the time when they came into contact with the Roman was clearly contradicted by facts in the shape of a large number of monuments and works of art. These Northmen were called barbarians by the Romans, but barbarism was an exceedingly relative term. These nations were eminently distinguished by their honesty, industry, economy, and morality, and were in these respects far superior to the civilised Romans. But it was, unfortunately, only too often that nations or tribes looked upon themselves as the only civilised beings, looking upon all outsiders as barbarous. The Chinese expressed great contempt for us, and we returned the compliment. To an Egyptian, an Egyptian only was civilised; to the Romans, only a Roman was entitled to respect. Thus the members of a particular nation despised other peoples whose language they did not know, and of whose manners and customs they were profoundly ignorant; and by withdrawing themselves into a narrow circle checked the progress of civilisation. Ignorance ruined the ancient Romans. Rapt in admiration of their own achievements, whether on the field or in the forum, in literature or in art, they came to look upon the Northmen, who fought one with another, and lived simply and frugally, as mere nonentities. Had they but condescended to make themselves acquainted with the fact that these men, though wearing coarse, home-spun linen, possessed excellent swords, spears, and battle-axes, all made of iron, and, better still, that they were gifted with indomitable courage, they might have averted the terrible catastrophe which fell upon them. It must be confessed that the Teuton nations did not at that period possess that higher intellectual culture, that love of refinement and art, which was as necessary to intellectual progress as moral worth. Their uncorrupted and unprejudiced minds were, however, more susceptible to the truths of the Christian religion. The Indians, Greeks, and Romans worked out their national life and development from within. The Teutons, on the other hand, developed themselves from without. The new style in art was founded on Roman, Greek, and Asiatic patterns, mingled with Indian and original Teuton motives. The originality of Keltic art could be best studied in the Round Towers. The Round Tower was a building of extraordinary interest, erected for a purpose which it was difficult to discover. We had obelisks, pillars, and towers in India, Scythia, Scandinavia, Mexico, and Peru, among Buddhists, Mahometans, and Christians. To point upwards to some better world, either by means of a symbolic block or the eloquent belfry, the metal hearts of which beat in unison with our joys or griefs, was a natural tendency in man. The Round Towers of Ireland were of Cyclopean structure, *i. e.*, built without cement, and had driven many a learned archæologist into propounding the wildest theories with regard to their origin. Three works on the subject the lecturer commended as especially interesting. Of these, that by Petrie was the most reasonable; that by O'Brien the most paradoxical; and that by Keane apparently the most learned. In addition to these, a whole phalanx of writers had endeavoured to constrain to speech these mysteriously silent stone spectres of a bygone age. There were fifteen different theories respecting these Round Towers, which respectively asserted: (1) that they were constructed by the Danes; this view was but vaguely supported, and was dismissed as unworthy of credence by Petrie; (2) that they were of Phœnician origin; with regard to this theory, it was highly probable that commercial relations had existed between the Kelts of Ireland and North Gaul and the Phœnicians, for even at the time of Solomon the Phœnicians had extended their navigation as far as the south-western coast of Spain; still we knew too little of their mythology to be able to say what the Round Towers might have signified, even if they were really to be ascribed to them; (3), that they were of purely Christian origin; (4), that they were Persian fire-temples; this theory went far, and served to connect Zoroaster and the Parsees with the Old Kelts; (5), that they were Druidical, a kind of minaret from which the priests summoned the worshippers on high festivals to prayer; (6), that they were gnomons, or astronomical observatories; this might have been the case; we could not, however, produce the calculations of one of these Keltic astronomers, nor discover any traces of his having made them; (7), that they were emblems of the creative god of nature; this was also possible; emblems of this kind were common to all nations; (8), that they were of Buddhistic origin, and had formed parts of Buddhistic temples; the Daghopas of the Buddhists bore, however, little or no resemblance to these towers; (9), that they were anchorite towers; there was nothing to make us doubt this; some of the early Irish Christians might have wished to live on a lofty height, so as to detach themselves from a sinful world; (10), that they were penitential towers; the cruelty of fanaticism was boundless; why should not some good persons have invented this kind of martyrdom for those who incurred their displeasure? (11), that they were belfries; we could, however, find no traces of bells, and a belfry without them would have been somewhat purposeless; (12), that they were keeps or monastic castles; the distinction between these keeps and the pillars just mentioned was not very obvious; the rules, however, were stricter for those who performed the duty of turning themselves into living statues; (13), that they were beacons; as, however, many of these towers stood in deep valleys, their applicability to this purpose was not apparent; (14), that they were watch-towers; this was, for the reason just adduced, unlikely, and (15) that they were monuments in commemoration of the Tower of Babel, and were erected by the dispersed Cuthites; this theory was the more remarkable, as it had been evolved from the theory of purely Christian origin. The lecturer next referred to the Irish Crosses, with their ingenious ornamentations, the motives of which were taken from textile fabrics. The cord, with its windings, twistings, knots, coils, and recoils, enabled the artists to produce an unlimited variety of beautiful and symmetrically-arranged patterns. The form of the cross was certainly peculiar, and went further than the Round Towers to connect the Kelts even with the most ancient Egyptians. The *crux ansata*, the sign of Venus, or, if reversed, that of the Earth, might well have been the Irish cross. This resemblance was equally striking in the crosses of Killamery, Kilklispeen, and Tuam, and in those of Scandinavia, Denmark, England, and Scotland. The sign of a crossed circle with ornamentations could be as well explained by a reference to mythical lore as by Christian motives. It was also striking that, considered philologically, most of the Irish saints appeared to have originated in heathen divinities. To see this required but a small stretch of the imagination. Thus S. Buithe was Wuodan or Buddha, or Boodh, S. Mochudee was said to be the representative of Mahody, an Indian divinity of Elephanta; S. Dagan, the Philistine god Dagon; and S. Moloch, the iron idol Moloch of some heathen nations, and so on. If these derivations were correct, the assertion that the Irish crosses were either Buddhistic or astronomical monuments might also be so. In connection with the elevated pillar-like round towers, as gnomons they might have been astronomical signs. We were especially concerned with their ornamentation, which might be studied in O'Neil's correct drawings, and in Westwood's work on early Saxon and Irish ornamentation. Passing on, the lecturer said that we should find that the Church had made great progress, and had established itself firmly as a spiritual power. The primitive simplicity of the Christian symbols vanished, and the ornamentation on tombstones became gorgeous. In referring to the Catacombs of Rome and Naples, the lecturer remarked that it was a most important fact that the inscriptions contained in the Lapidarian Gallery in the Vatican at Rome were void of all prayers for the dead; there were no addresses to the Apostles, Martyrs, earlier Saints, or the Virgin Mary, only one epitaph being found with the phrase: "Ora pro nobis." These facts went far to prove the simplicity of primitive Christianity. But a considerable change had taken place in the fourth century, A.D. In architecture, as well as in dogma, two distinct currents began to flow from the Christian source of love, one of which took its course towards the East, and became known to us as the Byzantine style; the other taking its course towards the West, and forming the Romanesque style. Whilst, however, Europe was expending its powers in rearranging the broken social relations of humanity, a new movement arose which threatened to overwhelm the whole world. Mahometan, Moorish, and Indian art progressed with rapid strides, and excluding, in reaction against the old idols, both animal and human forms, produced geometrically perforated slabs, and gorgeously decorated flats of marvellous beauty. Whilst in ivory-carving we could trace a gradual dying out of art from the 3rd to the 14th centuries A.D., Mahometan art tried to establish the false principle that only geometrical ornamentations were of mental origin, and that pictorial art was a mere untruth. But both branches were mental abstractions of solid bodies, the one of those of inanimate, and the other of those of animate nature.

The next lecture will treat of the Early Romanesque and Byzantine styles, in connection with Mahometan art.

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ADDITIONAL PRIZES AT THE INSTITUTE FOR 1871-72.—As already announced in the BUILDING NEWS, Mr. H. W. Peek, M.P., has generously placed at the disposal of the Council the sum of £72, to be devoted to money prizes for 1871-72—viz., two of the respective amounts of £42 and £20 for the two best sets of drawings illustrating the restoration of Eastbury Manor House, Barking, and a third prize of £10 for the best set of drawings illustrating the restoration of Barking Churchyard Gateway. These prizes are offered to architectual students whose age does not exceed twenty-one, under the condition that the prize drawings should remain Mr. Peek's property. In consequence of this, it was stated, at the last ordinary meeting of the Institute, that Eastbury Manor House would be withdrawn from the list of subjects for the Institute Silver Medal competition. A special vote of thanks was passed to Mr. Peek for his liberal donation.

Building Intelligence.

CHURCHES AND CHAPELS.

Calverton, Bucks.—This church has of late been undergoing some changes. Among them, may be mentioned the addition of a fine reredos of Italian mosaic work, representing the "Adoration of the Magi," and the chancel arch which has been treated in a most efficient manner with polychromatic decoration, the main features being an introduction of the emblems of our Lord's passion, on shields within quatrefoils. The pulpit has been painted with sitting figures of four great preachers, S. Peter, S. Paul, S. John the Baptist, and S. Barnabas. It is proposed that the west door (now blocked up) shall be re-opened, and a design for the same has been already made. The standards supporting the new altar rail are the work of the village smith, from drawings furnished by the architect. The mosaic and mural decoration are the work of Messrs. Bell and Almond, of London. The whole has been successfully carried out under the superintendence of Mr. E. Swinfen Harris, Junr., architect, of London and Stony Stratford.

Ellesborough.—The church of SS. Peter and Paul, Ellesborough, Bucks, was re-opened on the 2nd inst., after restoration and enlargement. The building has been enlarged only by the addition of an organ chamber and vestry on the south side of the chancel, but with the exception of north and west walls of nave and arcade, the church has been entirely rebuilt—the tower at a cost of £1,150; the chancel and chancel aisle at a cost of about £1,200; and the south aisle, porch, and portions of the nave at a cost of about £1,800. The style of the work is chiefly Perpendicular. The chancel roof is of the original steep pitch, and is of oak of massive scantling, covered with green slates. The nave and aisle roofs are almost exact reproductions of the ancient flat roofs, and are covered with lead. The whole of the stone carving has been executed by Mr. Bromfield, of London. The body of the church is fitted with open benches of pitch pine, those in the chancel being of oak. The passage ways are paved with Godwin's tiles. Mr. Leaver, of Maidenhead, has executed the ornamental wrought-ironwork of doors. Mr. Giles Holland, of Thame, carried out the several contracts, under the direction of Mr. Preedy, architect, London.

Exmouth.—On Monday week the foundation-stone of a new Wesleyan Chapel was laid in Brunswick-square, Exmouth. The building is to be a plain one (with the exception of the front) in freestone dressings with limestone facings, open portico in front, with windows over. There will be sitting accommodation for 350 on the floor of the building, and for 100 in the gallery at the south end of the building, which will be supported by pillars. The architect is Mr. Luder, and the builder Mr. H T. W. Perry, of Exmouth. The contract is for £875.

Freiston.—On Monday week the old Priory Church of Freiston, Lincolnshire, was reopened after restoration. The nave roof has been restored, and the eastern part renewed entirely. The east wall has been rebuilt, and the beautiful Transitional Norman arch exposed to view. The east window is new. The south aisle has been entirely rebuilt in character with the arcades inside, except the west wall, which contains a good two-light Decorated window. The church has been re-seated and floored with tiles throughout. The pulpit and lectern, the former of stone and the latter of oak, are new, and the screens to north and south aisles have been restored. The font has been restored, and the clerestory windows have been reglazed and repaired. It is much to be regretted that the north aisle could not be restored for want of funds. The works, which have been rather more than twelve months in hand, have been carried out by Messrs. S. & W. Pattinson, builders, of Ruskington, near Sleaford. Mr. Fowler was the architect.

Great Totham.—The memorial stone of a new Congregational Chapel was laid on Tuesday week. The building is designed to accommodate 320 persons—viz., 230 on the ground floor, and 90 in a gallery at the end. The walls are of the red brick of the neighbourhood, relieved with white arches, bands, and patterns; the window and door openings are circular-headed, the architecture being of a Romanesque character. The internal dimensions of the building are 47ft. in length and 30ft. in width. The estimated cost of the whole works, when completed, is £600. Mr. King, jun., of Halstead, is the contractor, and Mr. Charles Pertwee, of Chelmsford, the architect.

Liverpool.—On Saturday afternoon the foundation-stone of a Unitarian church was laid at Liverpool. It will be a small but neat structure in the Gothic style, having seat room for about 400 persons; and in its erection brick will be employed, with coloured brick and stone dressings. The cost is about £2,100, including the amount required for the purchase of the land. Messrs. John Parker & Son are the builders.

Lower Clapton.—On Saturday last the Bishop of London consecrated a new church, situated in the London-road, Lower Clapton. The structure consists of nave, aisles, chancel, chancel aisles, north and vestry porches, and western narthex. There is no tower or spire, but a lofty bellcote at the junction of nave with chancel, in which are two large bells. The style is Middle Pointed Gothic, very freely treated. The materials of which the church is built are brick and stone, the interior being elaborately ornamented by coloured bricks, and depends principally upon a lofty clerestory for its light, aided by a circular west window, the tracery being of a beautiful yet simple design. The clerestory windows are of two lights, with traceried heads, and ten on each side; the aisle windows are of single lights, small; and the east window is of five lights, with traceried head. Under the west window is an arcade of three brick arches, the tympanum of the centre, in front of which is the font, being filled in with an ornamental cross. The arches to the nave and chancel arcade and west wall of chancel are of stone, on Portland-stone pillars with carved caps. The contract was taken at £5,665, and has been well executed by Messrs. Axford and Whillier, under the superintendence of the architect, Mr. Wiggiuton, F.R.I.B.A., of Cornhill.

Oldcotes.—On the 3rd inst., the new (Roman) Catholic Church of S. Helen, Oldcotes, Nottingham, was opened. The church is designed in the style of the fourteenth century; it comprises a nave, with south porch, a chancel and chancel-aisle and transept; the chancel-aisle is divided so as to form a chapel and an organ-chamber, separated from the chancel by screens. The windows have flowing tracery, and the arches are of stone, handsomely moulded; Roche Abbey stone is the material of the walls, and for the roof and other timbers, the screens, organ-case, traceried doors, benches &c., cedar is exclusively employed. The architect is Mr. S. J. Nicholl, of London; and the builder, Mr. J. Athrou, of Doncaster.

Speldhurst.—On Saturday week, the rebuilt parish church of Speldhurst, Kent, was consecrated. The church has been rebuilt by Mr. Constable, of Penshurst, from the designs of Mr. J. O. Scott. About £4,500 has been spent in the erection, and the building, which is in the thirteenth century style, is calculated to seat about 450 people. It is built of Speldhurst stone, with open timbered roof and red tile covering.

Stow.—A new United Presbyterian church is to be built at Stow, N.B. At a meeting of the congregation last week, the committee recommended a plan prepared by Mr. John Paterson, architect, 21, S. Andrew-square, Edinburgh. The church, the style of which will be Gothic, is to be built of blue whinstone, with white freestone dressings. It will consist in plan of a nave, with aisles at each side, and a gallery over the entrance lobby. The number of sittings will be 500, and there will he a meeting hall, vestry, and other apartments in rear. The tower is placed at the south-west corner of the building, and, with the spire, will rise to the height of 110ft. On the opposite flank is a smaller tower, with a pointed and slated roof.

Sywell.—Sywell Church, Northampton, was re-opened by the Bishop of Peterborough on the 4th inst. The old building was in a deplorable and unsafe condition. The present restoration consists almost entirely of the re-building of the main body of the church. The works have been done at the sole expense of the Right Hon. the Lord Overstone. The character and style of the original edifice have been preserved. New open timber roofs of pitch pine have been added for the nave, aisle, and transept. The whole of the old seating has been removed, and is now replaced with open pitch pine seats. The pulpit, reading desk, and lectern are executed in wainscot oak. The works have been carried out from the designs and under the superintendence of Mr. J. Mander, architect, of Overstone Park.

BUILDINGS.

Hatfield Heath.—The foundation-stone of a new mansion about to be built on the site of Down Hall, at Hatfield Heath, for Sir H. Selwin Ibbetson, was laid on the 25th ult. by Lady Ibbetson. Mr. G. J. Cockerell is the architect of the work.

The New Buildings for the General Post Office.—On Saturday last the members of the Architectural Association to the number of between 30 and 40 paid a visit of two hours' duration to the new buildings now in course of erection for the General Post Office in S. Martin's-le-Grand. Mr. Williams, of Her Majesty's Office of Works, accompanied the members over the works, and most courteously placed the whole of the drawings of the building, plans, sections, &c., before the members. Before leaving, the members unanimously tendered a special vote of thanks to Mr. Williams, who briefly acknowledged the compliment, and so was brought to a close one of the most interesting and instructive out-door gatherings which the Association has had this season.

Wallasey.—On Monday, the foundation-stone of new public offices for the Wallasey Local Board was laid. The building, which is to be constructed of brick, will be in the Italian style, and will have a frontage to Church-street of 48ft., with a depth to the rear of 72ft. Mr. James T. Lea, the surveyor to the local board, is the architect, and Mr. S. Ellaby, of Liscard, is the builder. The cost, including that of the site, is estimated at £2,000.

COMPETITION.

Liverpool.—Out of sixteen plans which were sent in for competition for the new Stanley Hospital, Liverpool, the Medical Institution recommended three to the building committee for their selection. Sixteen out of seventeen members of the building committee voted in favour of the plan bearing the motto "Health," the second place being given to the plan bearing the motto "Meo periculo." The envelopes having these mottoes were subsequently opened, when it was found that Messrs. Duckworth & Medcalf were the successful competitors for the first prize, and Mr. T. Fogg the winner of the second honours. The adopted plan of the new building was submitted to the inspection of Mr. Hale, agent for Lord Derby, on Saturday, and after carefully examining the different sections he expressed complete satisfaction with the proposed building. The third plan recommended by the Medical Institution, although highly meritorious, could not be adopted by the committee in consequence of the excessive expense in carrying out the work.

LEGAL INTELLIGENCE.

Court of Bankruptcy, May 6.—Re Hollands.—The bankrupt, William Simon Hollands, described as an architect, of Richmond-terrace, Clapham-road, was unable to attend on a former occasion in consequence of suffering from small-pox. He had filed no statement of affairs.—Mr. Wood appeared for a creditor, Mr. Aldridge for an official assignee.—The bankrupt being still unable to attend, a further adjournment was ordered.

Important Decision Under the Highway Act.—In the early part of January last Mr. Jacobs, an extensive iron merchant and dealer in steam boilers and machinery, on the east side of Newington-causeway, was summoned before Mr. Benson, the magistrate at the Southwark Police-court, by the Vestry of S. Mary, Newington, under the Highway Act, 5 and 6 Wm. IV., cap 50, sec. 72, for unlawfully damaging the pavement in front of his premises adjoining the London, Chatham, and Dover railway-bridge.—The case was prosecuted by Mr. Besley, on behalf of the Vestry, and Mr. Metcalfe appeared for the defendant.—It was adjourned several times, owing to the magistrate's illness; but, having now returned to his duties, he gave his decision on Monday last. It appeared that the defendant had for many years carried on business as an iron merchant on the west side of the Causeway, but had entered into a large way of dealing in second-hand steam boilers and all sorts of heavy machinery. He leased from the London, Chatham, and Dover Railway Company six arches opposite, at a yearly rental of £250, and erected gates on each side. He had an entry in Tiverton-street, in the rear, but the locality was too narrow to admit heavy and large machinery. The consequence was that he was compelled to receive large boilers and machinery in front, and, to prevent obstructions, he had a trolly on which the goods were conveyed across the pavement. Mr. Jacobs applied to the Vestry before he took his goods across, and offered to pay for a substantial crossing, but they refused, and as the pavement was broken the Vestry repaired it, and took the present proceedings for damaging and destroying the pavement.—Mr. Metcalfe contended that the defendant had a right of entry to his premises, and the Vestry had no case against him.—Mr. Besley cited several cases in opposition, explaining that the Causeway had been dedicated to the public over twenty years, and no person had a right to disturb it. In fact, doing as Mr. Jacobs had done would be the ruin of many shopkeepers along that part of Newington-causeway.—Mr. Benson was of opinion that defendant had a right of entry to his premises, therefore he dismissed the summons; but, at the request of Mr. Besley, he granted a case for the Court of Queen's Bench.

Active steps are being taken by the Poplar Board of Works towards carrying out the improvement so long projected of the extension of the Roman-road into Stratford.

PARLIAMENTARY NOTES.

The Upper Trent Purification Bill.—On the motion on Monday for the second reading of this bill, Sir C. Adderley moved that it be read a second time that day six months. The ground of his opposition was that the Government had a measure which would deal with the subject much more effectually and in a uniform manner all over the kingdom.—Mr. Roden seconded the amendment, and stated that the object was to create a river conservancy with very arbitrary and unnecessary powers. It was unfair that a population of 160,000, none of whom, with the exception of one or two landowners, were in favour of the proposal, should be put to the expense of this legislation.—Mr. Loch said the pottery district spread over six or seven miles of the river Trent in a narrow valley, into which tributary streams flowed on either side, containing not only the refuse of manufactories, but other matter which made the river no better than a common sewer. The population of the district was increasing at a greater rate than in any other part of the country. Beginning with the century, the district contained a population of only 23,000 persons, which, in 1870, had increased to 129,000. It was quite clear that the condition of the river must become worse if some measures were not adopted to prevent it. This matter had long occupied the thoughts of the people of the district; and at a public meeting held at Stoke, a unanimous resolution was passed that a bill should be brought before Parliament to provide for the purification of the river.—Mr. T. M. Bass supported the bill.—Mr. Bruce said he was applied to by his hon. and gallant friend opposite to receive a deputation, in order that he might give his assistance in the House against the bill. That induced him to examine the bill, and after consulting with the Secretary of the Local Government Office, he was of opinion that he was bound to give this bill his support as a useful public measure.—Mr. Melly said the proposition of this bill was that a joint committee should be appointed, containing three or four members of each town council and each local board, and that this joint committee should have power over the sewers of the whole district. He appealed to the House whether such a power should be granted. The bill was brought in by one single landlord, and the petition for it was signed by sixty-four of his own tenants and gamekeepers, while it was opposed by 160,000 persons, and by every member of the district except the member for Derby. As he was deserted again by the Minister, he appealed for support to the Conservative party.—The House then divided—Ayes, 115; noes, 147—32. The second reading was consequently lost.

Metropolitan Tramways.—On the question of the second reading of the London Street Tramways (Kensington, Westminster, and City Lines) Bill, and of the Metropolitan Street Tramways (Westminster-bridge and Battersea Park, &c.. Extensions) Bill, Mr. Ayrton said, on Tuesday, that he desired that full opportunity should be given to hon. members of considering what might be the necessity for these bills. It was for them to consider whether the powers conferred under these bills should be granted. A proposal had been made to extend the tramway over Westminster-bridge to the Thames Embankment. That was a matter on which the convenience of Parliament ought to be consulted. He should be glad to hear any objection that might be urged, and, with that view, he thought it desirable that, if the bills were read a second time, they should be considered by a committee.—Mr. Hermon trusted that the question would be considered by a committee before the second reading of the bills. He had occasion, a few days ago, to make a journey to Greenwich, and his experience of the tramways on the other side of the water was anything but favourable.—Mr. Bathurst said he had been chairman of the committee which had considered this question, and the committee had declined to sanction the continuation of the tramway over the bridge, though he believed that the engineering obstacles which had formerly been apprehended were not now supposed to exist, and the increase of traffic which it was supposed would come by way of the Thames Embankment had not been realised. He concurred in the course suggested by the right hon. gentleman.—Mr. Dodson thought the best mode of solving the difficulty would be by postponing the reading of these bills for a short time, and he would, therefore, formally move, with a view to their further consideration, that the bills be read a second time that day week.—The amendment was adopted unanimously.

Crown Lands and Forests, and Foreshores.—The Chancellor of the Exchequer, replying to Lord H. Scott, said, by an Act passed in the 11th year of George IV., it was enacted that the Commissioners of Woods were bound to observe the directions, not being contrary to the provisions of the Act, which shall be given by the Treasury touching the discharge of their duty, and that no sales, except sales not beyond £100, shall be made under the Act without the previous authority of the Treasury. By an Act passed in 1866, the jurisdiction of the foreshores was transferred to the Board of Trade. These matters were carried out by the Secretary to the Treasury, but the Chancellor of the Exchequer was practically responsible.

Natural History Museum at South Kensington.—Mr. C. Bentinck asked the First Commissioner of Works whether her Majesty's Government had approved any design for the exterior architectural elevation of the proposed Natural History Museum at South Kensington; whether the approved design was substantially the same as that now exhibited by Mr. A. Waterhouse, at the Royal Albert Music Hall, and numbered 3673; and, if so, upon what grounds a design had been adopted which was at variance with the style of the adjacent buildings of the South Kensington Museum; and whether, before the vote for the Natural History Museum was proposed, he would exhibit drawings or a model of the approved design within the precincts of that house.—Mr. Ayrton said the design referred to was prepared some three years ago for the information of the then First Commissioner of Works, and that was the basis of the design that would be ultimately adopted, but daily improvements were being made in it, and as soon as they were completed he should be happy to have it exhibited in the library. If the rule was that such a building should conform to the other buildings in the neighbourhood, he had no doubt the architect would follow that course.—Mr. C. Bentinck asked when the right hon. gentleman would exhibit the design.—Mr. Ayrton said that must depend upon when the architect had completed it. When he had he should have much pleasure in exhibiting it.

Hyde Park.—Mr. Sykes wanted to know on Thursday week whether the First Commissioner of Works intended to lay down fine gravel for the convenience of riders on the side of the carriage road between Grosvenor-gate and Hyde-park-corner, as in former years.—Mr. Ayrton replied that the Superintendent of the park had always exercised a discretion in doing so when he thought the rainy season had ceased, and it had been his opinion that that period had not yet arrived.

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WATER SUPPLY AND SANITARY MATTERS.

Islington.—Dr. Ballard, medical officer of health for Islington, has reported to the Vestry that several houses in Rose-and-Crown-court, in the occupation of working men, are in a dangerous state, and unfit for human habitation. The report has been referred to the surveyor.

Importance of Irrigation.—It is well known that the land in most parts of the country is by artificial means now thoroughly underdrained, and the quantity of rainfall, which has of late years been much below the average, is said to be affected thereby. The injurious effect of long-continued droughts has, therefore, become a question of vital importance. With the view of obviating the heavy losses from these droughts, which occur to the agricultural interests in the west and south of England, it is proposed to make use of some of the natural valleys of the small tributaries of the Wye, near the town of Rhayader, for the construction of storage reservoirs. These reservoirs, it is said, could be kept filled by the surplus water during heavy rainfalls, and the surface of the water in them would be at the height of 590 feet above the level of the sea, so that the water would command and could be floated over an area of more than 2,000,000 of acres. By means of a head main channel the water could be taken first out of the reservoirs and conveyed to such lands as may be laid out for the purpose by means of smaller mains and trenches. It is estimated by Mr. Hamilton Fulton, the engineer, who was associated with the late Mr. Philip Pusey, M.P., in making experiments respecting the beneficial effects of irrigation, that the probable cost of irrigating the land on a large and systematic plan would not exceed an outlay of £12 per acre. On this basis he calculates that the present value of the fee-simple of the 2,000,000 acres averages £40 per acre, or an annual rental of £1 15s. per acre. Such land, after a proper system of irrigation was introduced, would be worth at least £4 per acre per annum, or a fee-simple value of £100 per acre.

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STATUES, MEMORIALS, Etc.

Monument to General Outram.—The Commissioners of Woods and Forests have appropriated a site of land on the Thames Embankment, adjacent to the Hungerford-bridge, for the erection of a monument to the memory of General Outram, the funds for which have been raised by private subscription of personal friends. Mr. Webster, the contractor for the Thames Embankment, has experienced considerable difficulty in the excavation of the foundation of the column, as, owing to the ingress of water, the shaft, which was originally contracted for at a depth of 22ft., had to be carried down to a depth of 44ft. before solid ground could be reached.

Ramsgate.—On Sunday week two new statues were inaugurated in the Benedictine Church of S. Augustine, Ramsgate; one of the Sacred Heart, the other of S. Joseph. The statue of the Sacred Heart is by Mayer and Co., of Munich, and that of S. Joseph by Mr. Boulton, sculptor of Ramsgate.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—T. T., S. & Co., P. E. M., C. B. A., M. B. A., W. F., G. L. J., L. & R., A. M. C., L. S. & Co., B. G., jun., W. H., E. L. S., J. B. S., W. B., H. St. J., W. H. L. (with drawing), J. H., W. W., E. P. M. (with drawing).

F. R. I. B. A.—Next week.

The Architectural Drawings at the Royal Academy.—In last week's Building News, it is stated (p. 337, bottom of column) that Mr. F. A. Butler's design for the cottage hospital in memory of the late Marquis of Westminster is "intended to be erected." Mr. Butler wishes us to state that his design is not the accepted one, and consequently is not the one which will be carried out. The statement in the catalogue that it is to be carried out is incorrect. Mr. Alfred Smith also wishes us to state that No. 885 (referred to on p. 338, top of column) is *his* design.

Correspondence.

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ARCHITECTURAL CONTRASTS.

To the Editor of the Building News.

Sir,—Contrasts are almost as numerous in architecture as in Nature, but with the essential difference that, whereas those in the human form—in intellect, in passions—are generally outside the scope of man's control, artistic contrasts are subservient to his will, and it rests with architects whether the great differences visible in their works shall reflect credit or the reverse on each respective author, when his designs are compared with others.

Probably there is no city more abundant in architectural contrasts than London, and although it may not contain such architectural glories as are to be found in other cities, as a field for study it is as valuable as any, presenting to us innumerable examples of what to avoid. It would appear, however, that existing meritorious works have very little influence on the minds of some architects. The same errors are repeated, and the same fond clingings to the wretched architecture prevalent in London at the end of the last century are still observable; and there can be no hope for marked improvement till these culpable blunders—often the result of ignorance—are rooted out. These thoughts suggested themselves to me on gazing at a building in Savile-row, Burlington-gardens, now undergoing extensive alterations for the Royal Geographical Society. Generally the works are simply in the character of renovations, but the conversion of a part of the premises into a lecture theatre, and the plastering to the elevations, deserve more than a passing notice. The lecture theatre is not yet completed; but enough is done to show that the result must be one certainly not calculated to remove the unfortunate impression prevalent as regards the ability of architects of the present day. The most glaring error at present is the cast-iron columns supporting the gallery and roof. These are what may be termed Classic in style, and in size would be ample if executed in stone. The detail of the mouldings, the caps, the bases, the flutings, the abrupt stopping of the flutings, are ugly in the extreme; and yet these columns are to be looked upon at every lecture by a society of learned men. A nice idea they will have of the art powers of the architect!

Turning now to the plaster-work in the elevations, the same spirit pervades it. The window heads to the elevation next Savile-row are as bad as they could be; the swagger ornament, the panels, the trusses, the mouldings, the tympana—all, all, utter trash, and the treatment of the long openings next Vigo-street innocent of any attempt at design; and all this is in delightful contrast with and under the very shadow of Sir James Pennethorne's magnificent University, of the dignified building of the Branch Bank of England, and immediately opposite Mr. Wimperis's clever and skilful building, showing what may be done with bricks and mortar when an architect conducts the work.

It is not too late to ask those who are superintending this work just to consider how much injury this way of doing it inflicts upon the profession generally, and to endeavour to bestow upon the finishings a little more care and thought, so as to relieve somewhat the bad taste, the inartistic feeling, and the unfortunate contrast that is apparent between this building and those mentioned above.—I am, &c.,

W. W.

A LOCAL BOARD SURVEYOR.

Sir,—The members of the Southborough Local Board met a short time since to elect a Surveyor, Several applications for the office had been received, and after some discussion the salary was fixed at £30 per annum. A local man was then proposed for the office, and the chairman thought it right to say that "he approved of the nomination, as the plans produced proved the candidate's abilities, and then his father had promised assistance." We suppose pecuniary assistance must be meant; it will certainly be required. The chairman then added "that it gave him great pleasure to know that they had such a talented young man in the neighbourhood." Several other members followed with flattering speeches, one remarking that their proposed Surveyor was "very gentlemanly and modest in his conduct." Now if this paragon is to have the enormous salary of £30 per annum, what would be offered to an ordinary surveyor who had no father to assist him, and, if gentlemanly, was not particularly modest? I write this for the benefit of aspiring would-be Local Board Surveyors, advising them to steer clear of Southborough.—I am, &c.,

H. L.

Intercommunication.

QUESTIONS.

[2223.]—**Clock Tower.**—Is there any rule by which to calculate the size of a clock dial in proportion to its height from the ground?—X. Y. Z.

REPLIES.

[2203.]—**Measurement of Glass.**—"S. S." has got himself into a dense fog; and, although suffering from total blindness, is most unwillingly conscious of the fact. He cannot, however, relish the idea of being accused of having allowed himself to wander into this fog, so he endeavours, by the employment of indecent invective and frothy outpouring, to silence those who plainly make him aware of his short-sightedness. I am afraid "S. S." is a little too sensitive, and am exceedingly grieved that, by simply asking him a question, and venturing to apply to him an observation he applied to another person, he should have supposed that I, for one moment, doubted his perfect acquaintance with matters artistic, practical, and technical: it was because I was so convinced of the soundness of his questioning that I desired a little more of his knowledge, and I have received it. But it seems to me that "S. S." does not yet—he will, no doubt, in time—possess the art (I tremble while writing this) of knowing how to intelligibly express himself. I gather now, from his last effusion, that he meant to ask how the glass in a Gothic window, probably with irregular-shaped squares, should be properly measured. He didn't say this in his first communication, and I was foolish enough to suppose that what he wrote was the exact information he desired to acquire. I now see my folly. It was my duty to think and think, so as to become acquainted with what he *meant*, not with what he *said*. But why, amongst all his vituperation, did not "S. S." condescend to answer the challenge I gave him? He wandered, poor fellow, in his raving, entirely away from the subject; let him return to his original questions, and to my response—word for word—and convince the readers of the Building News, by quiet proof, that I am the consummate ass that he says I am. Stick to the subject under discussion, clever Mr. "S. S.;" don't wander. And why, finally, did you, being acquainted with five distinct methods of computing the area of glass, put yourself in the place of an inquirer, and act so deceitfully? And allow me to say that I do not intend to discuss this question any further, as you have, to my mind, proved yourself ignorant of common courtesy and of the ordinary forms of politeness.—W. W.

Our Office Table.

The North London Tramway.—The tramway line to Highgate will in a few days be completed as far as the "Angel" at Islington. The workmen are told off in lengths at intervals along the whole line of the City-road, and there is scarcely any pause in their operations. The line is a double one, and the grooved rails are laid upon red deal sleepers, which have undergone the process known as "pickling" to preserve them from rotting. The sleepers are scantling of six inches in depth by four inches wide. The rails are apart from groove to groove about four feet six inches, and are connected by iron ties passing through the sleepers below the pavement at every six feet in the length of the rail. Between each line of tramway a good pavement of Guernsey granite is firmly laid, the interstices being filled in with concrete. The North London Tramway will convey passengers from Moorgate-street, City, direct to Highgate, affording facilities for reaching several suburban districts at a fast pace and a cheap rate.

Moorgate-street Railway Station. — The short line of rail which will connect Ludgate-hill Station with the station at Moorgate-street is being rapidly pushed forward. This connection will obviate the inconvenience of trains between the two stations having to back in or out of the Farringdon-street Station. This inconvenience is so great, and the shunting of the trains at Farringdon-street so dangerous, that there is not at present any regular service of trains between the London, Chatham, and Dover stations and Moorgate-street; but when the short curved line now in progress is completed a great traffic will develope itself between the south of London and Moorgate-street. The arrival shed and platform at Moorgate-street Station are in course of erection, and a wing of the additional buildings required at the station is nearing completion. Much work, however, remains to be done, and some months must elapse before the line will be opened for public traffic. Moorgate-street Station, when it receives this new addition of traffic, will become the greatest centre of metropolitan arrivals and departures by rail, including, as it will, connecting branches of the Great Northern, the North-Western, the Midland, the London, Chatham, and Dover, the South-Western (viâ Clapham Junction and Ludgate-hill, London, Chatham, and Dover line), and the entire system of the Metropolitan and Metropolitan District Railway Companies' lines.

The Patent Laws.—At a recent meeting of the London Association of Foremen Engineers the following resolutions were adopted:—1. That the recognition of property in inventions contributes most materially to the wealth of the community, and that the abolition of such property would be most injurious to the industrial progress of the nation. 2. That the Committee of the London Association of Foremen Engineers and Draughtsmen are hereby requested to consider the desirability of appointing a deputation to wait upon the chairman of the House of Commons Committee, to submit the foregoing resolution, and to give evidence thereon if necessary.

A Professorship of Chemistry at the Royal Academy.—The Royal Academy proposes to institute a professorship of chemistry, "the sole object of which," as Sir F. Grant stated at the Royal Academy dinner, "will be the study of the properties of colours, varnishes, &c., so as to insure, as far as possible, purity, and above all, permanency of colour." The professor will deliver lectures (says the *Athenæum*) on the properties of colour (? pigments), which will be open to artists generally; he will also instruct painters of mural decoration in fresco and oil. The Academy proposes to construct a laboratory for the purpose.

The Institution of Civil Engineers.—At the meeting of the members of this society on Tuesday, the 9th inst., Mr. C. B. Vignoles, F.R.S., President, announced that he proposed to give a *conversazione* at the house of the Institution on Tuesday, June 6, for which he should be glad to obtain the loan of models of engineering works, small and light pieces of mechanism and scientific instruments, as well as of paintings and water-colour drawings by ancient and modern masters of eminence, depicting some engineering work, object, or matter—as "a bridge, lighthouse, aqueduct, or harbour (or other effect of engineering skill) set in its appropriate landscape."

Chips.

Mr. J. Harding has resigned his office as surveyor to the Romford Board of Health. Mr. Herrtage has succeeded him.

Mr. Alfred Lawrence, of the firm of Lawrence Brothers, is a candidate for the vacancy created at the Metropolitan Board of Works by the resignation of Mr. Hows, the member for Shoreditch.

Professor Gertner, the well-known portrait painter, died the end of last month at Copenhagen. He was a member of the Danish Academy of Arts.

Messrs. T. Roger Smith, T. M. Rickman, J. Douglass Mathews, and R. Phené Spiers have been appointed by the Architectural Association to represent that body at the annual meeting of the Architectural Alliance, which will take place next month.

The Queen has expressed her intention to open the new S. Thomas's Hospital in the latter part of June.

The east window of Filey New Church, consisting of three lights, has just been filled with stained glass in memory of the late Admiral Mitford. The design and work was executed by Mr. J. W. Knowles, of York.

Messrs. Mathews and Quilter have received an intimation from the Metropolitan Railway Company that a supplementary premium of ten guineas has been awarded to the design sent in by them in competition for buildings on the Company's land at South Kensington

MEETINGS FOR THE ENSUING WEEK.

Tuesday. *Institution of Civil Engineers.* "On the Treatment of Town Sewage." By Mr. A. Jacob, Assoc Inst. C. E. 8 p.m.

Wednesday. *Society of Arts.* 8 p.m.

Thursday. *Society for the Encouragement of the Fine Arts.* "On Art Teachings in History." By Mr Daniel Grant. 8 p.m.

Friday. *Architectural Association.* "Put Yourself in his Place." By Mr. E. J. Tarver. 7.30 p.m.

Civil and Mechanical Engineers' Society. "On the Use and Selection of Stone for Engineering and Architectural Work." By Mr. A. C. Pain 7.30 p.m.

Saturday. *Museum of Practical Geology, Jermyn-street, St. James's.* Swiney Lectures on Geology. Lecture XI. By Dr. Cobbold, F.R.S. 8 p.m.

Timber Trade Review.

Prices, May 9.—Per S. Petersburg standard:—Archangel first yellow, £12 10s. to £14 10s.; ditto second yellow £9 10s. to £10; Quebec pine, first quality floated, £16 10s to £18; second ditto, £12 10s. to £13; third ditto, £8 10s to £9 10s.; first quality bright, £18 to £19 10s.; second ditto, £13 5s. to £14; third ditto, £8 15s. to £9 10s. Quebec first spruce, £9 10s. to £11; second ditto, £8 10s to £9; third ditto, £7 15s. to £8 5s.; S. John's first spruce £8 10s. to £9; second ditto, £8 to £8 5s.; third ditto, £7 10s. to £7 15s.; unsorted, £8 to £8 5s.; Nova Scotia, £7 5s. to £7 15s.; spruce battens, £7 to £7 10s.; pitch pine planks, £12 10s. to £13; Swedish batten, £8 10s. to £9 10s.; Gefle and best Swedish deals, £10 10s. to 12 10s.; Swedish and Gothenburg mixed yellow, £10 to £10 10s.; ditto common and thirds, £8 10s. to £9 10s.; Christiana deals, first yellow and white, £10 to £12 10s.; Petersburg and Riga white deals, £8 10s. to £9 5s.; Wyburg yellow, £9 15s. to £10 10s.; Petersburg yellow, £13 to £13 10s.

Timber per load:—Stettin, £2 13s. to £3; Swedish and Norway balks, £1 12s. to £1 18s.; Swedish, £2 10s. to £2 15s.; ditto small, £2 5s. to £2 8s.; Memel and Dantzig Crown, £4 to £4 10s.; ditto small best middling, £3 10s. to £4; common middling, £2 12s. to £2 17s.; undersized, £2 12s. to £3.

Deck deals per 40ft. 3in.:—Dantzig crown, 17s. to 21s.; ditto brack, 11s. to 16s.

Freights:—Quebec, £3 13s. 9d. to £3 15s. per standard for deals, and £1 7s. 6d. to £1 8s. per load for timber. The mills of the S. Lawrence, Saguenay, and the lower ports generally, £3 10s. per standard; Swedish ports, £2 5s. to £2 10s. for ports in the Gulf of Bothnia; Dantzig and Memel, 14s. per load; Archangel, £3 12s. 6d. per standard; Petersburg £2 per ditto; and Riga £2 10s. per ditto.

Stock of timber, deals, &c., at the public docks, 1st May (from Messrs. Churchill & Sim's circular):—

	1871.		1870.
Foreign deals in pieces	1,082,000	...	686,000
„ battens „	722,000	...	498,000
„ boards „	1,017,000	...	934,000
„ fir timber in loads	22,000	...	11,000
Colonial pine deals and battens in pieces	933,000	...	716,009
„ spruce ditto in pieces	371,000	...	474,000
„ pine timber in loads	1,000	...	2,500
East Indian Teak	6,400	...	7,200

Trade News.

WAGES MOVEMENT.

The Newcastle Engineering Trade.—At a meeting of engineering firms of Newcastle, Gateshead, and district, held on Saturday—Sir William Armstrong in the chair—a circular was read from the acting committee of the Nine Hours' League requesting a reduction of the hours of labour from fifty-nine to fifty-four hours per week. The meeting unanimously resolved that the application should be declined, and that the secretary of the League be informed of such resolution. The masters are very firm, and it is rumoured that, in the event of the men persisting in the movement, there will be a general lock-out.

Preston.—The joiners of Preston are agitating for a cessation of work at noon on Saturdays. On Saturday last the representatives of the workmen received a letter to the effect that at a meeting of employers it had been unanimously resolved "that the request of the workmen be not granted, the same being contrary to the rules previously agreed to by both parties concerned. Six months' notice is required before any alteration shall take place in such rules." At some of the yards on Saturday the men left their work at twelve o'clock, apparently determined to have the complete half holiday. On Monday last it was announced that six of the employers had conceded the demand.

Sheffield.—In consequence of two firms of painters not agreeing to the advance of wages recently asked for by their workmen, fifty operatives commenced a strike on Monday. The success of the workmen is confidently expected.

Leeds.—On Tuesday night a meeting of the carpenters and joiners of Leeds was held in the Temperance Hall, S. Peter's-street, with the object of determining what steps should be taken in regard to the nine hours' movement. Correspondence has taken place between the working committee appointed to promote the movement and the masters' association, and this was read at the commencement of the meeting. The men had sent in a notice asking, amongst other things, that their hours should be reduced to fifty hours a week, and their wages advanced from 6½d. to 7d. an hour; and to this the masters had replied that the present state of trade in Leeds would not reasonably allow of any of the demands of the notice being complied with, and that they refused to appoint any committee to discuss the proposed alterations. It seemed that the men's committee had declined to submit the question to the Arbitration Board, and had named a deputation of six to debate the question with the employers, and on Tuesday night on their behalf it was proposed that the meeting should pledge itself to support the committee in working out the notice as sent to the employers—namely, that fifty hours constitute a week's work, that they be paid 7d. an hour, that piece-work be abolished, and that arbitration be done away with. The manner in which the committee had conducted the correspondence with the masters was freely criticised, a strong opinion in favour of the nine hours' movement was expressed, and some of the speakers advocated leaving the question to be decided by arbitration; but there were others who considered arbitration as carried out in Leeds a mere sham. Several amendments were proposed, and in the course of the discussion upon them the committee placed their resignation at the disposal of the meeting. It was resolved almost unanimously to go on with the demand for nine hours and 7d. an hour, and the members of the working committee on the platform were augmented to the number of twenty, to form the committee to carry out the object of the meeting. The majority of the men present were strongly opposed to arbitration being resorted to, and in favour of a strike in the event of the masters refusing to concede the nine hours.

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TENDERS.

BRIGHTON.—For office improvements at the Town Hall. Mr. P. C. Lockwood, C.E., Borough Surveyor. Quantities by Mr. J. Chester, Lausdown:—

G. Cheesman & Co.	£2728
G. R. Lockyer	2625
B. E. Nightingale (accepted)	2617
Blackmore & Howard	2469

CITY.—For the erection of new printing-offices for the *Standard* newspaper, 103, 104, 105, Shoe-lane, for James Johnstone, Esq. Mr. Rawlinson Parkiuson, architect. Quantities supplied by Messrs. George Lausdown & Pollard:—

Colls & Co.	£6690
Crabb & Vaughan	6089
Deards	5749
C. N. Foster	5727
Sewell & Sons	5690
Henshaw	5656
Morter	5573
Jackson & Shaw (accepted)	5553

HOMERTON.—For the erection of new Wesleyan chapel and schools at Homerton. Mr. Alexander Lauder, architect; Quantities supplied by Messrs. Lee & Walton:—

Hill & Sons	£6575
Dove, Bros.	6445
Hobson	6344
High	6325
Bartlett & Sons	5920
Hill, Keddell, & Waldram	5819
Allen	5810
Colman	5765
Ennor	5675
Brown & Robinson	5607
Henshaw	5518

LIVERPOOL.—For the erection of a warehouse for Messrs. Pickford & Co., Great Howard-street. Mr. Geo. R. Isborn, architect and surveyor. Quantities supplied:—

Mullen	£6398
Urmason	6150
Rome	6150
Tomkinson & Sons	5997
Haigh & Co.	5947
Holme & Nicol	5938
Jones & Sons (accepted)	5930

For Hydraulic Machinery:—

Sir Wm. Armstrong & Co. (accepted) £905

NORFOLK.—For additions to Coltishall Hall, Norfolk. Mr. R. Makilwaine Phipson, architect:—

Newell	£1755	10	0
Downing	1468	14	0
Cornish (accepted)	1438	0	0

OAKLEY.—For the erection of a shop and six cottages at Oakley, Bishop's Stortford, for Mrs. Chamberlayne. Mr. A. W. N. Burder, architect:—

Roberts	£2200	0	0
Brown (accepted)	1703	2	6
Cole, Bros.	1597	0	0

S. LUKE'S.—For building three houses in Memel-street, Old-street, S. Luke's, for Messrs. Leage & Allberry. Mr. G. R. French & W. S. R. Payne, architects. Quantities by Mr. E. Morfee:—

Blott	£1337
Perry, Bros.	1333

TUNBRIDGE WELLS.—For re-building Ashurst Lodge, Langton, near Tuubridge Wells. Mr. Josiah Houle, architect:—

Geo. Smith & Co.	£9067
Macey	8744
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Conder	8414
I'Anson	8387
Axford & Whillier	8164
Foster	8018

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FARNCOMBE (Surrey), May 15.—For the erection of an additional class-room. Mr. Rowe at the Francombe School.

CARDIFF, May 19.—For the erection of new infirmary, vagrant wards, board rooms, and offices, at the Cardiff workhouse. W. P. Stephens, N. Clerk.

TRINITY HOUSE (London), May 15.—For the erection of additional buildings for gas works at Haisboro High Lighthouse. Robert Allen, Secretary.

LEICESTER, May 18.—New Cattle Market and Abattoirs.—For the erection of the abattoirs, offices, houses, bridges, walls, and other buildings. Samuel Stono, Town Clerk.

DRIGHLINGTON AND GILDERSOME GAS-LIGHT COMPANY, May 23.—For the supply of 1,000 yards of 8in. cast-iron socket-pipes, weighing 116lb. per yard, to be cast vertically, and tested to a pressure of 300ft. of water, and delivered at Birkenshaw-station, or on the Bradford-road, between Westgate-hill and Holme-lane. Thomas Wilkiuson, secretary, Gas Office, Drighlington.

EAST RUDHAM CHURCH, NORFOLK, May 27.—For the new tower, nave, and complete restoration of the church. Messrs. Clarke & Hollands, Newmarket, Cambridgeshire.

CHELSEA, May 22.—For the formation of roads and footways, and the construction of sewers and other works in the parish. Charles Lahee, Vestry Clerk, Vestry Hall, King's-road, Chelsea.

ADMIRALTY, May 15.—Contract for Haulbowline, Cork Harbour, Ireland. For the supply to H.M. Dockyard, Ireland, of 1,200 loads of Baltic fir timber. Directors of Works of the Navy, Admiralty, 2, Spring Garden-terrace, London, S.W.

BRADFORD, June 6.—For emptying, cleansing, and disinfecting all the middins, ashpits, privies, and cesspools in the said borough. W. T. McGowan, Town Clerk, Town Clerk's Office, Bradford.

WINCHESTER, May 27.—For the erection of a new Guildhall, police-station, museum, and other buildings. Walter Bailey, Town Clerk, Winchester,

CANTERBURY, May 24.—For three cottages, stabling, and other works, near Canterbury. John Green Hall, architect.

DARWIN WATER WORKS COMPANY, May 31.—For the masonry and other works required in the construction of a store and service reservoir. Thos. Duxbury, secretary.

CHICHESTER CORN EXCHANGE, May 17.—For the building of a corn store. Architect, Mr. Elkington, 95, Cannon-street, London.

DURHAM, May 20.—For a new police-station and police-court at West Hartlepool, and for new cells and police-court at Stockton. Ralph Park Philipson, Clerk of the Peace's Office, Durham.

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Palm, fine	„	37 0 0	0 0 0
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THE BUILDING NEWS.

LONDON, FRIDAY, MAY 19, 1871.

ILLUSTRATED CATALOGUES OF RUBBISH.

If architects have not, long before now, been snowed up in their offices by a storm of illustrated catalogues, it is to that valuable invention, the waste-basket, that they owe their safety. By incessant labour in filling and discharging it, the drift may be so far reduced as to leave only a slight sprinkling over the desks and tables; and at the year's end, few of the sufferers, probably, realise how much has been accomplished by their manful and persevering efforts. Could each packet be consigned to its destination just as the postman delivers it, matters would not be so bad. It might then be possible to have a separate letter-box for this class of communications, connected by a sufficient waste-pipe or wooden trunk with the dust-bin; and the downfall would thus be carried off without delay or inconvenience. But, unfortunately, amongst the mass of rubbish which cannot be got rid of too soon, there is now and then something which one would be sorry to lose. After dozens of catalogues which simply prove that the firms who issue them are quite in the dark about the capabilities of their own special businesses, there may come one which is really welcome, and which deserves to be kept. Containing good designs, based on sound principles of construction and well studied, even in the smallest details, it affords a presumption that those who have produced it may be trusted: that they will turn out their work with intelligence and thoroughness: that they mean to rise in their profession, and so deserve to do so. Their good catalogue, in short, marks them for men to be tried; while the bad catalogues of their contemporaries mark them quite as emphatically for men to be avoided. No architect with any regard for his own reputation can risk putting his drawings into the hands of people who, from sheer ignorance, will caricature them in execution, who will murder his detail, perhaps spoil his construction, and certainly make his design a distorted likeness of what it should have been—"The same, but ah! how changed!" And this is all that can be expected from those who send him gratuitious proof of their own want of art education.

Looking at the matter purely as one of business, it is surprising that so small a section of the advertising houses should trouble themselves about the design of the things they advertise. A well-known writer, indeed, has estimated that in order to reach the maximum of what is commonly called "success," some 30 per cent. of a man's efforts should be directed to doing his work well, and the remaining 70 per cent. to getting it universally talked about. There is too much truth in this cynical remark; but it hardly applies to the case we are now considering. It makes all the difference whether the work is to be advertised amongst the public at large, or amongst a class who have more or less studied it, and understand what it might be and ought to be. People who do not know good from bad naturally think most of what makes most noise. Having little confidence in their own judgment, they ask, like *Punch's* visitor at the Royal Academy, "What it is that a fellow is to admire this year?" and decide on admiring whatever they hear of most frequently. Yet even the uninitiated, we may hope, will soon need more than Mr. Helps's 30 per cent. of excellence to satisfy them. Taste and refinement spread, slowly and insensibly, but surely, even amongst those who take little pains to acquire them, and the manufacturer who ignores such things will find himself year by year falling further out of the race. But it is not the general public who are in question here. We are noticing the illustrated catalogues which are circulated amongst architects, and most of which are filled with designs which everyone deserving the name of an architect can only laugh at. The matter has nothing to do with styles of ornament. It is not that a series of Classic sketches are sent to a man whose practice is purely Mediæval, or a number of Gothic ones to another who never ventures beyond Greek or Italian. It is that the designs exhibited fail in the very styles they attempt, if they attempt anything to be called a style at all; that no one, in whichever direction his preferences of this sort may lie, can possibly have anything to say to them; that the Classic architect looks on their vernacular Classic with horror; and that the Gothic one on their manufacturers' Gothic with disgust. It would surely be worth taking a little trouble in order to make them less repulsive amongst the class they are meant to attract. Whatever is worth doing is worth doing well; and a firm which takes the great trouble and expense of issuing an illustrated catalogue may as well take the slight additional trouble and expense necessary to make it a good one. Even bad designs have to be paid for; in drawing and printing, in paper and postage, they cost just as much as good ones. The people who issue them go nearly the whole length with their successful contemporaries, but just at the one vital point which divides failure from success they stick fast, and proceed no further. They do *almost* all that is necessary to gain position and honourable fame, and for want of doing quite all, they miss them. They are like a farmer who should take the greatest pains with his ground, ploughing and dressing and cleaning it, spending hundreds of pounds in labour and manures, and should then at the last moment try to save a few shillings per acre by sowing it with worthless seed. There is no extravagance like misplaced economy, as many of those who practise it doubtless find. "But," some of them may say, "if the architects to whom we send catalogues do not like our designs, we are perfectly ready to execute their own." Yes, doubtless, but how would they be executed? Art workmanship cannot be done except where there is some art talent employed about it, and there is all the difference in the world between two copies from the very same design made by two different classes of manufacturers. This, of course, is a thing that the inferior manufacturer cannot be made to see; could he see it, he would very soon cease to be inferior. If he could only realise the multitude of points where his copy fails he would be in a fair way to begin correcting those failures. Unhappily, they are invisible to himself, though obvious enough to those whose approval he solicits. Art training, in fact, acts mainly by giving keen and quick perception, by making clear at a glance those delicate shades of expression which escape the untaught eye. All good work, even the boldest, is, as Mr. Ruskin says, full of delicacy. The mechanical part of it, indeed, may be done by common workmen, provided only that there is a trained intelligence to superintend them. But the firm who issue a catalogue of inferior designs show clearly that they neither have had an art training of their own nor employ the services of any one who possesses it.

It is not, however, a mere question for theory and speculation whether excellence of design deserves the attention of manufacturers. It is one that can be still more easily decided by facts. In spite of all that can be done by advertising and the other modes of pushing a business, it remains well known that the most successful houses, at least in the trades connected with architecture, are, with few exceptions, those whose standard of design is the highest. There is no need to quote the names—for they are familiar to everyone—which have become celebrated for such things as metal-work, pottery, stained glass, cabinet-work, or pattern tiles. They gained their reputation, and they keep it, not less by artistic excellence than by first-rate workmanship. The two things, indeed, usually go together, for no one tries so heartily to make his work endure as the man who feels that it deserves to endure. And there are openings for equal success, on similar principles, in many other branches of trade in which the art element as yet is rarely to be traced. Everything, for instance, which the iron founder originates (as distinguished from what he makes to order from drawings) seems to have a special curse upon it. Stoves and grates, in particular, might be meant as an ingenious means of slow torture to everyone of artistic sensibilities. The genius of vulgarity glories, as it were, in thus confronting us in the very centre of our houses, and looks out triumphant from the one spot of all others from which we might think most completely to expel him. It is surely not unreasonable to wish for foundry patterns which would at least be inoffensive. Without putting the productions of every firm on the same level, it still is a weary and disappointing task to make selections from most of them; and the expense, to say nothing of the trouble, of having grates purposely made from an architect's drawings can in many cases be ill afforded. And if grates, as a rule, are repulsively ugly, chimney-pieces, even the most costly, keep them well in countenance. The plain ones are generally shams from top to bottom, and the rich ones have splendid material lamentably ill-used. The marble mason, again, when he turns to monuments and gravestones, succeeds but little better than he did before, and seems bent on attaining the least amount of excellence with the largest possible outlay. The plumber, more modest than some of his brethren, knows his own weakness, and only prays that his work may be covered up; but the gasfitter, unlike him, makes his most questionable productions only too conspicuous. We might go on with the list, excavating from the year's accumulations all sorts of catalogues, for all sorts of goods, most, though not all, alike in this, that their designs are more calculated to lower than raise the names which are attached to them. It is in the interest of manufacturers, quite as much as in that of the public, that we have tried to point out how these productions strike architects and other art-educated people. We have looked at the matter simply as one of business, and find it hard to see why, when excellence of design has been proved to be a first condition of success, so many candidates for public favour should be so little in earnest about attaining it.

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THE ENGLISH PICTURES AT THE INTERNATIONAL EXHIBITION.

In a former article we gave our readers a very full and detailed account of the picture galleries at the International Exhibition, and stated our conviction that as to lighting and space they would be about the best in England, and perhaps fully equal to any existing galleries on the Continent. This opinion has been endorsed by all those artists and connoisseurs who have seen the Exhibition since the pictures have been placed. They have all unanimously declared them to be, as nearly as possible, perfect, and quite suitable rooms for the display of works of art. Very few objections have been raised to what we must consider a drawback—viz., placing the sculpture down the centre of the galleries; indeed, the arrangement has been so skilfully made that the vista is as little disturbed as is possible, and the pictures do not appear to suffer so much from the glare of the marble as we should have expected. It was at first proposed that all works exhibited at the International should have been painted by the artists within the year, so as to give the Exhibition a distinctive character amongst other international exhibitions, and also that the pictures sent should have never before been exhibited in London. These conditions were found to be too strict, and the rule was relaxed so as to take in pictures painted within the last ten years, and even this rule has not been strictly adhered to, many pictures now in the galleries having been executed prior to that date; while we have met with not a few works which we remember having seen only last year on the walls of the Royal Academy, besides one or two pictures which were favourites with us at the '62 Exhibition. But far be it from us to quarrel at another view of our favourites; on the contrary, it is quite refreshing to look at them once again; while it seems but fair that the younger members of the profession should be allowed to see their works occupying better places than the exigencies of the Royal Academy and the necessarily limited space there will allow of. It is a pity that the offensive smell from the oil used for the machinery in motion underneath the picture gallery should sometimes be so strong as to render looking at works there a pain rather than a pleasure, and we trust that the authorities will have thick curtains placed at all the entrances to exclude at once the noise and the smell. We observe a good many foreign pictures intermingled with the English ones in this gallery, and this seems to us an excellent thing. Why should each nationality have a picture gallery to itself? Would it not be much better that they should all be mixed together and compete one with another? Let us hope that this plan may be adopted thoroughly next year, and that the picture galleries, at least, will be completely international. In so large an exhibition it will be perhaps best to depart from our usual custom of taking all one painter's works together, and to follow the numbers, which, by the way, are as yet far from perfect.

No. 10, "The Minstrel's Gallery," by H. S. Marks, is one of this artist's best works; but it has been so recently before the public that further criticism is unnecessary. No. 15, "Portrait of the Artist," by T. J. Gullick, is also rather too well known to us; there is something in the attitude which reminds us of the portrait of himself that old Sass exhibited years ago in the Royal Academy, and called "Ecce Homo." No. 16, "Hauling up a Fishing Boat," by R. Beavis, is a clever work, built upon the Rosa Bonheur school; the fallen horse in the foreground is painful, and the action of the other horses rather exaggerated. "Crawley Rocks, Oxwich Bay," by C. P. Knight, No. 19, is a very sunny picture; the reflection of the hill-side in the water of the bay is capitally given. The advantage to pictures in the good light in which they are placed in the International Exhibition is very apparent in Mr. Archer's "Helen of Kirconnell;" it looks better in colour, and in every way than it did in last year's Academy. The subject is that verse of the old Scotch ballad where Helen is shot in her lover's arms by some jealous aspirant for her hand. The figure of the man (dimly seen half hidden behind the fern across the stream) who has done the dastardly deed seems too big in proportion to the other figures; the landscape part of the picture is excellent. No. 30 is a pleasant little landscape by George Mawley. No. 35, "Evening," by G. Lucas, is too much of a copy of Linnell, and is, besides, a replica of other works by the same artist; it is too tricky in method to please. Mr. Leighton's "Mermaid," No. 36, is not a very favourable specimen of this great artist's powers. Mr. Poynter's "Andromeda" is a very clever work; the flesh is capitally wrought, the drapery is effective, and the dash of the waves against the rock excellent. No. 39, "Boscastle Harbour," is conscientiously painted, though the subject is but a poor one, and the treatment dry. The artist asks a very modest price for so large a work. No. 42, "The Causeric," by Alma Tadema, representing two Roman ladies gossiping together, is very delicious in colour, and the marble pavement, as usual, beautifully painted. The figure of the dark lady on the right strikes us as wanting back to her head; she is also painfully ugly, but M. Tadema seems not to care to paint feminine beauty. Mr. Watts has many portraits in this exhibition; all powerful works, they are curiously displayed in Quaker-like frames, which has at least one merit, that of simplicity. In No. 54, "Lord Lawrence," Mr. Watts has been more successful as to likeness than in No. 49, "The Prince de Joinville." We are glad to see again Mr. Faed's important picture of "The Last of the Clan;" the figure of the old man on the white pony is pathetic. No. 63 is another good specimen of the artist's powers. Mr. Poole's poetical picture of "Philomena's Song" may always be seen with renewed pleasure; the colour is beautiful, and the feeling of the work charming. It is a curious contrast to this artist's other work here, "The Visitation and Surrender of Syon Nunnery, Isleworth," which, though it has the same feeling for colour, reminds us of Charles Landseer's pictures; several of the nuns are, though, as pretty in their demure way as the ladies listening to the song beside the beautiful lake. No. 73, "The Plough," by F. Walker, is full of power and full of light; the brilliant glow on the sand-hills is true to Nature. This is an impressive picture, and one of the artist's best works. Though so recently exhibited, it is with much pleasure we see it again, for there is a simple grandeur about it which is rarely seen in landscape art. The painter seems to have seized upon Nature in one of her dignified phases, and has embodied it on his canvas. He has painted an effect, not a scene, and is therefore an artist indeed, and not, as are so many landscape painters now-a-days, a topographist. No. 76, "Diverging Paths," by F. B. Barwell, is a good subject, but rather black and uninteresting in treatment. No. 78, "Sunset on the Pine Forest at Castel Fusano," by an Italian artist, Cavaliere Vertunni, is a bit of scene-painting rather than a truthful rendering of Nature. No. 85, "Renewal of the Lease Refused," is one of Mr. Nicol's best works here. No. 35, by the Dutch painter Israels, "The Mother Sick" would be too painful were it not for the pendant picture, No. 92, "The Mother Well." They are charming in tone, and avoid all that meretricious colour so much seen in Faed and Nicol; there is also none of that affectation of finish and patchiness of parts which is an essential characteristic of the Scotch school. No. 100, "The Way to Church," by Rossiter, is a pretty subject, and the landscape part of the picture, though a little hard, is good in tone, but the heads of the children are too large. No. 103, "A Spring Day—Birch Trees Budding," by J. MacWhirter, is very delicately handled, and the relief of the slender birchen foliage against the blue sky is cleverly given. In No. 104, "Island—Henley-on-Thames," by W. Field, the background is too important for the figures, and the flickering lights upon the trees divert the eye from what we presume to be the principal point in the picture, the ladies getting out the lunch. No. 114, "Tea on the Grass," by J. Archer, is a very prettily painted group of portraits; but here, again, the background entrenches too much upon the figures. In No. 136, "School Time," by J. Clarke, the artist has exaggerated the wisdom of the schoolmistress by giving her too large a head. No. 142, "Painter and Patrons," by Eliza Turck, a boy painting the portrait of a toy soldier on a board, while his little sister looks on, in a sort of half-workshop, half-carpenter's yard, is very carefully painted, and all the details perhaps a little too minutely given. The children do not quite unite enough with the background, but it is a little picture of much merit, and very modest as to price. Another pretty little picture is No. 167, "The Fisherman's Family," by W. Ascroft. Mr. G. Cole has a fine landscape with a felled tree in the foreground, fresh and spring-like, No. 161. No. 189, "Herod's Birthday Feast," is a good specimen of Mr. Armitage's art, painted with great vigour.

In passing into the tower galleries, it is with regret we see the pictures so badly placed. It is impossible to display pictures with furniture, especially when they must be hung so high above the eye. Surely it would have been better to refuse the works altogether, than to exhibit them under such very disadvantageous circumstances? It is alike discouraging to the artist, and a blemish to the Exhibition, for an Exhibition cannot with success be treated like an ordinary room; it is larger in proportion, and displays furniture not made to suit the room, but to expose in single pieces. and such furniture does not assimilate itself with pictures.

Passing through the water-colour gallery, which contains such a perfect collection of water-colour art that it requires a notice to itself, we will proceed to the second large gallery called Room X. No. 273 is perhaps the best of Mrs. Ward's works here, representing an incident in the childhood of Joan of Arc. The colour is less gaudy than usual with her, but the figure of Joan of Arc is inelegant, and the head made too big, by the superabundance of hair. No. 285, "Lane Scene near Ecouen," by J. C. Thom, is pleasant in tone; the colour of the moonlight is well rendered, and is not that unpleasant black and white colour it is usually depicted. The cattle going down the lane in the darkness are very well drawn. No. 290, "The Drunkard's Cloak," by J. E. Soden, is a good subject, but bad in colour. In No. 313, we find an old favourite, "Electra at the Tomb of Agamemnon," by F. Leighton. Mr. Watt's portrait of "Thomas Carlyle," No. 318, is more like Barker's "Woodman" in the Vernon Gallery than the author of "Frederick the Great." Perhaps Mr. Millais never painted a finer picture than his portrait of his three little girls, called "Sisters," No. 323: their faces are so charmingly real and childlike, and the masterly painting of the white drapery and flowery background is beyond praise. The many art students who visit this exhibition will do well to study carefully the painting of the faces; a great deal may be learnt from close inspection of the artist's mode of work. No. 384, "The Mower," by Arthur Hughes, is an aggravating picture; it combines gross faults with great cleverness; the colour is poetical, and the sentiment charming, but the drawing is so bad that the children's heads are immensely too big, and the feet of the mower, if visible, would be out of the picture. No. 371, "The Sea Coast after a Storm," by W. L. Wyllie, is too violent, but proves the artist's ability for better things. "The Toilet of a Lady of Ancient Rome," by C. W. Nicholls, No. 379, represents a sad scene, alike repulsive and degrading: an unfortunate slave having dropped a crystal vase, is ordered a flogging by her haughty mistress. Several beautiful slaves, assisting at the toilet, gaze with trembling sympathy on the luckless girl, and in the distance stands the grim executioner with the whip. This work is highly finished and well painted. Mr. Walker's picture of "The Bathers, No. 389," is wonderfully improved by being placed under glass; instead of looking husky and dry, it appears juicy and full of beauty. The delicate hues of the background are tenderly and truthfully painted. It is a very fine work. The positions of all the bathers are so graceful, without being affected, but the drapery strikes us as rather too ragged. No. 427, "Mr. Gladstone," is Mr. Watt's best portrait in the gallery; it is both powerfully painted and an excellent likeness. Mr. Millais has painted upon "The Knight Errant" since it was in the Academy last year, and has improved it very much. The face of the damsel, instead of being full, is turned to the side, and partially covered with falling hair. This alteration refines the sentiment of the picture. Nevertheless, it is rather a pity that the painter has not attended more to the drawing of the figure. The ankle is too big, and the foot injured by bad shoes, not at all the shape a beautiful foot should be, and the entire painting of the flesh is a little coarse. The figure of the knight, however, is very perfect, and the background is full of charm. No. 432, "On the Way to the Cattle Tryst," by Peter Graham, is a fine landscape. We were glad to see here, too, "A Spate in the Highlands," by the same painter. A curious picture is No. 436, "Scene from the Merchant of Venice," by J. C. Hook, painted long before the artist took to his marine subjects, at the time when he was called "Red-stocking Hook." Observe how clever is the arrangement of the whole work, how much character there is in Shylock, and what a sweet womanliness in the disguised Portia. No. 442, "Whittling," by E. Barclay, is clever, but the treatment rather too flat. "Moonrise," No. 445, is Mr. H. W. B. Davis's best landscape here; the cattle are, we suppose, lighted by the dying-out daylight, as so much colour could scarcely be perceived by moonlight. London is wonderfully changing with all the new buildings, and the Thames Embankment is so rapidly altering the Thames, that Mr. Roberts's paintings of the river will soon have a new value added to them as mementoes of what has been. There are two capital works by him in the exhibition. Our favourite is No. 458, "S. Paul's from the Thames, looking East." Space forbids our mentioning many other works of merit which have found wall-room in these galleries, so we must leave it to our readers to find them out, and criticise them for themselves. We have confined ourselves to merely pointing out those which we consider most important.

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THE MAKING AND REPAIRING OF ROADS.

A ROAD should be considered as a structure having two essential parts, a foundation and a wearing surface. The duty of the first is to keep up the second to its work, and may be made in any way that satisfies the one condition of unyielding firmness. It has been sometimes said that a slightly yielding or elastic foundation is better than a rigid one, and if that elasticity could be had at a sufficient depth below the surface it might be so, but practically it is not to be had, and the danger of trying to make the foundation elastic far exceeds the objection of rigidity.

A great deal of unnecessary discussion used to be indulged in as to whether the plan of making the foundation which was adopted by Mr. Telford or that practised by Mr. Macadam was the better. Telford's plan was to pitch the road-bed with rough stones, set closely by hand, with their broadest edges downwards, and their greatest length crosswise of the road, the breadth of the upper edge of any stone not exceeding four inches. All the irregularities of the upper part of the pavement were broken off by the hammer, and the chips packed by hand and wedged into the interstices. The depth of the stones when finished off was 7in. in the middle part of the road, 5in. at a distance of 9ft. on each side of the centre, 4in. at 12ft., and 3in. at 15ft. The surface thus formed a curve, having a rise of 4in. in the centre, This is clearly a good foundation, but it is somewhat against it that the bed is flat, and that if water should percolate through the top coating and through the pavement it would, on some kinds of ground, as upon clay, weaken its bearing power; but if the ground is porous, as sand or gravel, or rocky, as it was on most parts of the great Holyhead road made by Mr. Telford, this objection to a flat bed does not arise. Whenever the bed, however, consists of clay or other impervious ground, the bed should be sloped downwards from the centre to the sides to about the same extent as Mr. Telford allowed — viz., 4in. in a width of 15ft., so that water may drain away. Two straight slopes for this purpose are better than a curve. Macadan, on the other hand, considered this pavement foundation to be unnecessary, and insisted that the native soil, properly formed and drained, must be considered to be the foundation, and carry the weight of the traffic; and that whatever stone may be laid on is only to preserve this foundation from injury, and its thickness should be regulated only by the quantity of material necessary to form such a protection, and not at all by any consideration as to its own independent power of bearing weight; and that it is an erroneous idea that the evils of an undrained, wet, clayey soil can be remedied by a large quantity of materials.

But what makes the discussion upon the two methods of little use, is the fact that Macadam's own practice approaches that of Telford, for on laying on the broken stone he was careful to lay first a layer 3in. thick, and have that pretty well consolidated by traffic before any more was put on; and this and the succeeding layer may be taken to stand in the place of the pavement of Telford. The native surface having been formed, Macadam's system was to lay first a layer of three inches of clean broken stone on a dry day, and after the traffic had almost, but not quite, consolidated it, the ruts being kept raked in as soon as they are formed; a second layer of three inches was laid down in a wet time, moisture facilitating the union of the two.

Then the third layer forms the top coat, and carries the traffic. Macadam insisted strongly on the necessity of the stones being clean and angular, whereby the angles interlock with each other and form a solid structure; whereas, if other material be admitted under the pretence of binding, it prevents this close union, absorbs water, and in frost disrupts the mass. Macadam's method of laying the foundation—that is, the first two layers of broken stone—has the disadvantage that in wet clayey ground the traffic forces the stones into the ground, and it rises through the interstices, although Macadam maintained that draining would prevent this. Draining, however, cannot altogether prevent it, and it is only to be prevented by selecting a dry time for laying down the first layer of stone. The first layer being accomplished the second becomes easy. Telford's pavement is easy under any circumstances and in any weather, but is more expensive. It has the advantage, however, of distributing the weight on the surface over a large area of foundation, for if we take a wheel touching two square inches of the surface, the pressure is carried down to the foundation stones, which rests on a broad surface of, say, ten inches by five inches, or fifty square inches, so that the bearing surface is multiplied twenty-five times. To prevent the displacement of the foundation stones, the carts bringing the stone were not allowed to pass over them.

The foundation, then, having been laid, whether of one or the other kind, or in any other way, so that it be unyielding (in the manufacturing districts engine ashes are largely used, and make a very good foundation, laid on seven inches deep in two layers, the traffic being allowed to pass over them before the top coat is put on), the wearing coat has then to be put on, and now the quality of the stone comes into question. The most durable stone is that which is toughest. Mere hardness is no test of quality for the purpose of road making. Flint is hard enough, but it is almost the worst material for a road, because it has no toughness.

In his "Discourse on the Study of Natural Philosophy," Sir John Herschel says:—"Hardness is that disposition of a solid which renders it difficult to displace its parts among themselves; thus steel is harder than iron. The toughness of a solid, or that quality by which it will endure heavy blows without breaking, is again distinct from hardness, though often confounded with it. It consists in a certain yielding of parts, with a powerful general cohesion, and is compatible with various degrees of elasticity."

The most useful stone is that which is most difficult to break up. Such is the blue granite of Guernsey; a trap-rock found at Clee Hill, in Shropshire (the Clee Hill Dhu stone); a stone got near Macclesfield, in Cheshire; the whinstone of the north of England; the Penmanmaur stone from Wales; beach pebbles and boulders; a stone brought in the bottoms of ships as ballast from Bombay; another from Port Philip; and other such kinds of stone. Stone of secondary quality is the carboniferous or mountain limestone, and the harder sandstones. Broken flints form a third quality, and the lowest is flint gravel. This last is unfit for anything but bye-roads. It is very extensively used in the south of England for all kinds of roads, but it is not economical to use it where there is considerable traffic. The comparison of the strength of different kinds of stone by the steady weight that pieces will bear before crushing is not admissible in the case of road-stone, for the weight it has to bear is not a steady one, but one of impact. Most of the roads round London are made with flint gravel, and in the coaching days, there was a select committee of the House of Commons upon Highways, and before that committee evidence was given that for the first few stages out of London it required ten horses to do the same work that eight did beyond them, and that the horses out of London, although better animals to begin with, were worn out in four years, while on other roads they would last six years. It may be laid down as an axiom that it is more economical to bring good materials from a distance than to use inferior ones obtained close at hand. Thus, in London, for the heaviest traffic, it is more economical to use Clee Hill Dhu stone at 16s. 3d. per ton, Enderby stone at 15s. 6d., and Gueruscy granite at 15s. 6d., than any other stone, although the prices are less; and at Manchester they use the Penmanmaur stone at 12s. per cubic yard rather than other stone which might be had much nearer. The thickness of this top coat is not of much consequence; it is only required to protect the foundation from the action of the traffic, and may be any thickness that is convenient; and the most economical thickness will be determined by considerations of labour—how much it costs to lay down a coat of 2in., one of 3in., one of 4in., and if 6in. be put on it must be put on in two layers of 3in. each, and then how much will that cost? And each of these costs must be compared with the standard of wear, which will be the same whatever thickness the coat of stone may be; and in this, as in many other things, the middle course will more often be right than either extreme, and it will generally be found that from 3 to 4 inches is the best thickness. It is true that on such a foundation as Telford's more than this is required above the pavement, or the road would be too rigid; and accordingly Telford directed that 4in. of broken stone should intervene between the pavement and the top coat of stone.

"The middle 18ft. of pavement is to be coated with hard stones to the depth of 6in. 4in. out of these 6in. are to be first put on and worked in by carriages and horses, care being taken to rake in the ruts until the surface becomes firm and consolidated, after which the remaining 2in. are to be put on." The next thing to be considered is the size to which the stone of the top coat shall be broken. Both Telford and Macadam said to such a size that its longest dimension should be not more than two and a half inches, which would be, for average materials, cubes of about 1½in., and Macadam further directed that no stone should be more than 6oz. in weight. But neither dimension nor weight can be accepted as logically defining the proper size, because that depends upon the nature of the material. To reduce flint or sandstone to the dimensions proper for trap-rock and granite, would be to ensure their immediate grinding up and removal from the road. But there is no doubt that for the better kinds of stone the size can hardly be too small, so long as they are broken to a uniform size, and here the superiority of hand-broken stone over that broken by machine is very evident. Hand broken stone is more uniform in size, and approaches more nearly to the best form—the cube—than can be had with any machine, for while the machine breaks up some of the stone into too small fragments, it cracks many of the pieces of the right size, and thus when the traffic comes over them they split, and they are split also by the action of frost. We believe the French engineers disregard the cleanliness and uniform size insisted upon by Macadam, and allow even dust to be mixed with the clean angular stone, but we are convinced that this is a mistake. The object of having the stones clean and free from extraneous matter, is that they shall interlock, and the angles adjust themselves so as to come home, stone to stone, and so form a solid body; but when dust or other substance is allowed to come into the cavities they cannot do so, and are thereby rendered less stable. It is probable that the success of the French engineers in making roads is due to the attention they pay to rolling the surface; but even by that means they cannot force the stones into contact when dust intervenes. Breaking stone would seem to be a simple thing enough, and one that any able bodied-man may do as well as another, but it is not so. In the first place, it requires a particular kind of hammer. The head must be of solid steel. The shape of the face of it must vary with the kind of stone to be broken. The handle must be pliable, and not a stiff piece of wood—it must therefore, be a green stick—and hazel or ash plant is used. Then a stone-breaker must know where to hit the lump he is to break, and where he shall hit it depends on the nature of the stone. A great deal of strength is wasted by men unaccustomed to stone-breaking, who take up the work for the first time, and work with tools of the wrong kind.

The shape of the surface of a road is important. There are three forms of surface; one, the most common one, a curved surface, having a rise from the water channel to the crown of 4in. or 6in.; the second form is the straight slope on either side of the centre; and the third the hanging road, where the slope is all to one side, the road having only one water channel. In the latter case it is generally dictated by local circumstances, but the other cases are general. The higher the crown is made above the water channels for the sake of getting the water quickly off the road, the more is the traffic restricted to the centre of the road, for nobody will drive on sidelong ground if he can get a level footing. There is not much difference between the two forms, for if the road be made at first with straight slopes it will soon become worn down at the apex into something like a curved form. But there is a good deal to be said against the practice of raising the centre of the road too much in either way, for the object ought to be to get the traffic spread equably over the width of the road, and thus we come to the conclusion that as little rise as possible should be given to the crown; and 3in. in 10ft., or 1 in 40, is sufficient to allow the water to run off, and if it takes a longer time to run off such a road than it does on a more rounded one, that is of less consequence than unequal wear.

The road having been formed, it has to be maintained as nearly as possible in its original form. There is no stone that is of exactly quality throughout, and the reason why a road wears into holes is that the softer parts here and there are worn away before the rest, leaving the hardest portions of the stone standing up in ridges or knobs, and when this attains to a sufficiently objectionable degree the holes are to be filled up with new stone broken very small, and no more stone used than is sufficient to bring the surface up to the level of the adjoining unworn portions of the road.

The common error is to put too much stone on a place that wants some mending, and many roads have been raised considerably above their original level. The object should be to keep up the thickness of the metalling as nearly as possible to that it originally had. This cannot be done absolutely, but it can be approximated to; for instance, if the original thickness of the top coat be 4in., one inch of the best part of the material, as well as that used for patching, will be worn away in, say, twelve months, leaving the thickness nowhere more than 3in. It will be proper then to repair the road with a fresh coat of stone, raising the thickness to, say, 5in., which would then allow two years' wear before another coat of stone would be required.

Whenever a new coat may be necessary, the surface of the road is to be picked up to a depth of two inches, the surface readjusted in form, the material sifted and relaid, with the addition of as much new stone as may be required to make up the two inches. The time of year most suitable for repairing roads is the spring; the succeeding summer then hardens the road and leaves it in a good condition to resist the traffic during the wet winter months.

Of the new asphalte roadway, the English experience is not yet sufficient to enable us to judge of its durability, but so far as it has gone the wear appears to be absolutely nothing in Threadneedle-street and Cheapside, and the smoothness and noiselessness are much in its favour; but although it may ultimately be generally used, stone paving will probably continue in use for many years for the heaviest traffic, although the objections to it, even to the best kinds of stone, are numerous, and some kinds of stone are simply abominable from their slipperiness; and the noise that a stone-paved road produces is such that where the residents have sufficient influence over the parish or other local authorities, they prevent it being laid down, and in other instances, where the appeals against it have been unsuccessful, residents have vacated their houses, and the authorities have lost the rates upon the property. The only thing that can be said for stone paving is that it costs less in maintenance than a macadamised road does, where the traffic is excessively heavy; but when we come to get broken stone properly rolled and set before the traffic is turned on to it, there will be some hope of the more extensive use of that kind of road.

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THEORY OF THE ARTS.

Education in Form—Solid Bodies.

(*Continued from page* 342.)

I HAVE attempted to show that architectural science, like knowledge in general, is made up of two kinds of facts, one kind being taught by pure reason, as all self-evident truths, the other kind derived experimentally, or mainly from observation, as physical science. To a certain extent, indeed, before we can reason or deduce we must gather empirically certain facts, and although science has advanced from the abstract to the concrete or from the simple to the complex, the first notions of all sciences, as I have shown, were indefinite or empirical, and it is purely in the order of their simplicity or easiness of comprehension that we gain facts. The science of geometry is conclusive on this point. An experimental introduction to geometry is the only way of making the study interesting and valuable. The mind must observe or perceive before it can reason. Hence the futility of teaching abstract formulas and definitions of lines and angles before some experience has been gained by discovery of facts.

A child gathers its native tongue, not from the laws of grammar, but from the conversation of those about it. These laws are learnt afterwards, and only after a sufficient quantity of words have been gained and understood. If we apply this principle to the primary ideas of form or geometry, we shall first begin by objective or solid representations of squares, cubes, pyramids, globes, and the like, or model exercises in the primary ideas of form, before proceeding to the abstractions of their properties and parts. A stock of elementary notions are obtained in this way which the student can analyse by degrees—the faculty of abstraction being gradually called into requisition at the same time. Solid geometry, which in most of our treatises is placed after "plane," should unquestionably be learnt first, as more representative of actual substance and geometrical conditions; besides which the solids admit of being cut into sections, illustrative of the various plane figures, and exercise the mental faculties of analysis and combination in an eminent degree. A thorough acquaintance with solids of various forms would help more to the attainment of stereographical drawing, so essential to the architectural student, than any elaborate treatise on "Projection." What is more useful than the sections of conical bodies by planes, or the intersection of curved surfaces, in the various requirements of the art of building? Now, actual experimental observation by cutting rectilinear and curvilinear solids will aid the eye and mind to such a degree that verbal descriptions of the methods of projecting these lines will readily be comprehended. The diversity of combination and intersections obtained affords to the architect a prolific scope of suggestion and invention, which is of far more value than any amount of archæological studies. The designer is continually called upon to consider the effect of certain features or parts of his design being intersected by wall surfaces at different angles; and the want of this knowledge of solid bodies is painfully manifest in many designs and actual buildings. The thing, in fact, is left to chance; the plan and elevation is too frequently left to work out the problem in actual bricks and mortar, and crooked lines or twisted surfaces, bungled mitres and intersections, are the inevitable results which no amount of surface enrichment can atone for.

If this knowledge of solid geometry is left to be acquired in the usual way after certain abstractions have been mastered, the consequence is that only a vague superficial notion is obtained, because the mental process has not been facilitated by the aid of the eye. No clear conception of space and form can be made without some palpable or tangible evidence submitted to the senses, and we have ample proof of this in the absurd notions entertained by many of truths that are simply accepted as such without experimental evidence. Many propositions of science are thus no more than mere facts committed to memory without any tangible meaning or distinct idea of them. The use of models cannot be too strongly commended as assisting the mind through the eye to the comprehension of relative dimensions and form, particularly in studies like geometry, where abstract truths can only be learnt mentally. No solid ideas can be formed, for example, of the tetrahedron, cube, octahedron, or other regular or irregular solids, from mere definitions or descriptions of them; but when once the real objects have been presented to the mind through the senses, their properties are readily understood, and their construction is rendered both simple and entertaining. No more useful study for an architect there can possibly be than the construction of the various solids, or the development of the coverings of solids, as polyhedrons, prisms, pyramids, cones, &c. This can easily be learnt, practically, by models; but their development on paper should be thoroughly mastered, as a very essential step to architectural knowledge. The use of stereography in carpentry, roofing problems, masonry, &c., is of great importance, as every practical man knows. The combination or junction of roofs of different forms, as conical with plane surfaces, and irregular plans, as trapeziums, require often a very correct knowledge of the effects of intersection under different angles and slopes, nothing being so disagreeable or ugly than twisted or winding surfaces.

After solids have been mastered, the comprehension of plane figures is naturally acquired, the mind having undergone a valuable experience, or tentative process, through the perceptions.

As a great authority on intellectual education has said, "The proper preliminary to geometry is a practice in those constructive processes which geometry will facilitate." It is quite certain that after solid geometrical ideas, correct notions of points, right lines, parallel lines, angles, surfaces, and the other component parts of plane geometry, are quickly gained by a process infinitely more instructive and easy than by dry definitions, or abstractions of such elements of form. I will simply refer my younger readers to "Inventional Geometry," published by Messrs. Mozley, of Paternoster-row.* It will thus be evident that such a mode of studying geometry as I have shown will have more relish for students, particularly those who have acquired a certain power with their pencil, as it will naturally draw out their inventive faculties, and employ more profitably much of that time which is now wasted in learning to draw or copy the figure, landscape, and architectural examples. Again, to give abstract or rational demonstrative geometry first, leads many students destined for practical professions to neglect altogether what they deem so repulsive, simply because it is a natural law that the mind will devote itself to those studies it best understands and enjoys. The faculties being thoroughly disciplined with problems which have been presented both ocularly and mentally by diagrams and models, they readily begin to comprehend those relationships of forms and quantity which rational geometry or Euclid's Elements treat of. Definitions, axioms, and all abstract formulas are now understood, and the practical problem may give place to the demonstrative theorem.

One application of great value of such a knowledge of the geometry of solids is the art of projection or delineation on a plane surface. Drawing from models, as taught in our art schools, is the best initiatory method of acquiring this art, and this should accompany the experimental knowledge of of solids already recommended. The rules of isometric and parallel projection should *follow* these first ocular notions of expressing solid bodies on paper, though this order is often reversed, upon the assumption that sketching from nature is a more advanced stage of mental perception than the practice of abstract rules. Isometrical representation is one that is of greater value to the architect than generally recognised, and is far too little employed, but often substituted by false and delusive perspective. The great advantage of this mode of projection is that the receding lines and surfaces of objects are equi-angular and parallel, thus admitting of a scale. The plane of projection being equally inclined to the isometric axes, lines, and surfaces, a relative proportion can be established to the real size, and thus it is easy to construct scales having these relations to one another. Not so in pictorial or natural perspective, the correct drawing of which is frequently neglected, and the art made a means of deception.

But there is one other great advantage in objective or tangible representation, which shows how valuable an ally the art application of geometry is to the science as a rational or scientific study. I allude to the value of correct diagrams in illustration of scientific instruction of various kinds, as in giving correct ideas of relative magnitude, velocity, time, and other abstract conceptions not otherwise clear. Thus we have a valuable practical verification of this mode in giving the relative strains and forces in constructions of various kinds, as roofs, girders, &c., which has lately been used; also the same method may be employed in conveying statistical, geological, meteorological, and even social phenomena and information. The relation of space to area may be shown by diagrams of squares. The sizes or areas of countries, &c., can be proportionately shown by taking the square root of the area in miles as the side of the square, or inversely. Correct ideas of relations of number, value, space, to time or other conditions, can thus be formed which no verbal description could give. Again, the problem of the circle and many calculations of areas and solids may derive much help from diagrams or representations; and many problems only solved by number and numerical relations generally may receive important aid from geometrical approximations.

G. H. G.

WHAT WILL THE CONFERENCE DO?

THERE is to be, as our readers are aware, a Conference of Architects to be held in London, to be opened on Monday next, the 22nd inst., at the rooms of the Institute of British Architects. We fully recognise the necessity for this architectural gathering, and are not a little interested in the solution of the question, "What will come of it?" As we announced last week, there is to be an address from the President of the Institute, a general reading of papers, with subsequent discussion of their contents; and there is also to be a dinner, without which Englishmen seldom assemble—or like to assemble—to effect any object. Meanwhile there has been issued from the Secretary of the Institute a general invitation to architects all round to come forward with suggestions or information in reference to the topics mentioned in the programme. This last feature of the coming gathering is, to ourselves, far more interesting than the promised papers on "Archæology and on Art," "Construction and Science," or than even the dinner. We should like very much to know whether town and country architects (affiliated and non-affiliated to the Institute) have largely availed themselves of this invitation to contribute suggestions and information out of which the Conference will be able to devise and bring about any wholesome measure of practical benefit to the professional body.

Is there not a cause for a great Congress of English Architects—town and country architects? Assuredly there is. It is high time that practitioners (they are all to be practitioners) in London and the provinces, who differ so very widely in their respective methods of serving the public, should come together, and devise means for healing the professional maladies which they are all agreed exist, to their serious discomfiture and degradation. If these gentlemen will but achieve this one feat in the Conference of 1871, they may possibly, in the next one to be held, inaugurate a sound, national code of uniform professional practice, a uniform technology (no slight desideratum in these penny post days), and, last not least, a uniform Institute of English (not to say British) Architects, to the utter rout (artillery, horse, and foot) of the professional quacks who now thrive and wax fat on the general chaos we see in the *corpus architectonicum*. There is plenty of work to be done, many doubtful questions to settle, many anomalies to get rid of, or at least to abate. Here are some that occur to us; it is not every day that town and country architects meet in friendly conclave, and we cannot do better than invite attention to a few urgent matters that occur to us. They are, it is true, chiefly trade questions, as one might say, "not to put too fine a point upon it," and we offer them, with all due deference, for solution:—

1. What are the true functions of an architect; is he an equity judge between client and builder, or an agent only of his client, whose object is to squeeze for him all that can be got out of a contractor, or ("tell it not in Gath!") a mere builder's crony, to squeeze all the two can out of a client? This third alternative would seem to be the prevailing notion with town capitalists, if one may judge by the very homœopathic bits of town practice that are distributed among the crowd of London architects. How much, let us ask, of the street and "terrace" architecture of London and its enormous suburbs can our town architects display as their handiwork to their country cousins?

2. If two parts of sharp sand go to one part of good stone lime, how many pupils ought in fairness to be mixed with any given number of architects' clerks? It is a very old, old problem this. Cannot the assembled architects settle it for all time to come?

3. Is it, or not, *comme il faut* for country architects to take out their own quantities, and measure up their own extras and omissions; and if not, why not?

4. Is a uniform Building Act desirable for both the metropolis and the provinces, as not a few of our legislators seem to think?

5. Having regard to the very many Jeremiads which occasionally fill our columns on the mischief and the cost of architectural competitions, is it not desirable for town and country architects all round to refuse "from this time forth to evermore," to supply committees with, say more than one rolled-up sheet of drawings per book post per architect?

6. Is the traditional 5 per cent. commission on outlay too much or too little to receive: does it or not include the detailed adjustment of builders accounts; and, if the Conference can settle the question, what is to be done with non-conference architects ("knob-sticks," let us call 'em), who take lese from their clients to undersell their brethren; or, exact more from, say, the contractor, to "sell" their clients?

Here are just half-a-dozen questions, put for simplicity's sake in homely phraseology. Can the Conference deal with them: in a paper, or a discussion, or in (perhaps more potent than anything) an after-dinner speech? We "pause for a reply."

S. S.

ON ORNAMENTAL CAST IRON.*

SO much has already been said by many able writers, great in the artistic world, both for and against the subject of this evening's paper—viz., "Ornamental Cast Iron," and from whose opinion it seems so much a want of modesty to differ, that I feel great diffidence in venturing to occupy your time with my ideas upon the matter, but it is with the hope that, while, on the one hand, I may interest some of my hearers, I shall myself gain information and instruction from the discussion which may follow my remarks. I propose to take up the subject in the following order, viz.:—(1) A slight glance at the ornamental cast ironwork of the last, and the early part of the present century, and of the present time. (2) The fitness of the material for ornamental and architectural purposes. (3) The principles which should govern the forms of ornament in cast iron.

I.—ORNAMENTAL CAST IRON WORK, PAST AND PRESENT.

It is in every respect unfortunate for cast iron that it first came into use in England for ornamental purposes in the seventeenth century (though I believe there are specimens of ornamental cast ironwork as old as the fifteenth century in Germany), as it suffered in a most marked manner from the debased taste that prevailed during the last 150 years. Had it been known to the great Mediæval architects, I feel sure they would have made use of its great capabilities, and have left the stamp of beauty on this, as they did on other materials they so fittingly applied to architectural and ornamental purposes.

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*See also remarks by Mr. Marcel, Mr. Wyse, Herbert Spencer.

* Paper read by Mr. C. H. Driver before the Civil and Mechanical Engineers' Society on Friday evening last.

Almost the first use made of cast iron was in railings, gates, gratings, fire-grates, and work of a similar nature. Most of my hearers are no doubt aware that the railings round St. Paul's Cathedral were amongst the earliest works executed in cast-iron; they were cast at the Gloucester furnaces, about two miles from Lamberhurst, Sussex, the then principal iron furnaces in England, which were supplied with iron-stone dug in the immediate neighbourhood. This railing cost about 6d. per pound. The total cost of the whole railing and stone coping was about £11,000; and, considering that there could have been but little known then of the capabilities of the material, they are fairly well cast, and are well suited to the design of the building they surround.

It is curious to note the poverty in the designs of railings, gates, posts, fire-grates, &c., which were in general use until the last twenty-five or thirty years. The minds of the designers seemed always to run on one idea. For example, an original mind discovered that a lot of spears stuck up would make a good railing, and for ever after railings must always be spears, somewhat varied, it is true, in the shape of the head, but spears still. Again, during the great wars at the latter end of the eighteenth and the beginning of the present century, many iron guns were cast, some of which became useless as guns, and were converted into street posts. Straightway (the number of damaged real guns not being sufficient to supply the need for posts) sham guns were cast with imitation balls jammed into the imitation muzzles. Then as to fire-grates, some of us doubtless remember the what was at one time almost universal design—viz. Fig. 1. In everything where cast iron was employed there was the same poorness and flatness of treatment, no doubt due in some measure to the want of skill on the part of the manufacturer or workman, who cramped all the efforts of designers who might have wished to do better things, by saying that this or that pattern would not "draw," *i.e.*, leave the sand easily. I cannot but think that much that has been said in disfavour of the use of cast-iron for ornamental purposes by great art-writers like Mr. Ruskin must be due to the wretched design employed, and the bad use to which cast-iron has been put, rather than to any inherent unfitness of the material itself for artistic purposes.

During the last twenty or five-and-twenty years, there have been great improvements in the designs employed for this, as for other materials, and with improved designs manufacturers have risen up who have shown no mean skill in the practical execution of them; and this is an important point, as the success of a design for cast iron ornamental work depends very largely upon the skill of the manufacturer, and the intelligence brought to bear upon the subject; for in my own experience I have had work executed from the same drawings by two founders—the work of one had all the spirit and intention of the design, while that of the other was heavy, dull, and lifeless.

In the first rank of ornamental iron manufacturing founders of the present day must stand, I think, Mr. Walter Macfarlane, of Glasgow. This gentleman has made a complete revolution in the matter of gutters, down-pipes, terminals, crestings, &c., and to a great extent the general improvement that has taken place in these matters is due to the example set by him to other manufacturers, as he has shown, by a skilful arrangement of the moulding-boxes, and attention to the cooling of the castings, that it is possible to execute almost any design in cast iron. In thus mentioning Mr. Macfarlane's name, I do not mean to say there are not now other manufacturers who will turn out work as well as he does—for instance, Messrs. Laidlaw, of Glasgow, the Colebrookdale Company, Hood, of Reading, and notably Skidmore, of Coventry (who have of late turned their attention to cast iron), and many others I could name; but I consider Mr. Macfarlane in a great measure led the way.

The credit I have given to the manufacturers for the improvements which have taken place in cast iron work must, however, be shared with the pattern-maker; for however skilful the founder with his sand, and however good the design, the pattern is still the great point, and I may say very often the weak point, for designs are mostly made to a comparatively small scale, and these designs are placed directly in the pattern-maker's hands, who are generally intelligent carpenters, and can make a model or pattern of a girder or water-pipe well enough; but they have little or no knowledge of drawing, and none of ornament, and they set to work to enlarge the design as well as they are able to the required size, giving their own reading of any ornament that has o be executed. When the pattern is finished it is rarely seen by the architect or designer; but the founder proceeds to cast from it at once, and the result is such that it disgusts all with any artistic feelings, and they are led to lay the blame for the failure of the effect of the work on the material, instead of on themselves for their own neglect of a most important part of the process of the manufacture of ornamental cast iron.

If good ornamental cast iron is wanted, there must be a good pattern, and to get a good pattern it is necessary to take some considerable amount of trouble. It amounts to this: after the design has been drawn to a small scale, so as to judge of its general effect, it should be drawn to its full size by the designer himself, who, while so doing, will often see points of detail which he can improve as he goes on, for if he leaves the design to be enlarged by another it will only be slavishly copied, not only as regards the good points, but also with respect to all the defects of the original, which are likely to be exaggerated, and it is wonderful what a difference the mere thickness of a line makes in the beauty of a curve.

The design being drawn full size, should be slightly shaded, as it greatly helps the pattern maker to understand the intention of the designer, and to make sure of a satisfactory result, the pattern itself must be inspected while in progress, as it may occur that some slight alterations are necessary to suit some practical difficulty in moulding, and it is well that the designer himself should make the required change, and there is the further advantage that workmen get to understand to some extent what you want done.

It will be found with the better class of pattern makers (if a little pains are taken at first in explaining one's wishes, and sometimes, perhaps, making a rough sketch in clay of any particular part), that they will quickly accustom themselves to the designer's ideas, and save one a great amount of trouble in the end.

I wish to call the attention of my hearers to some full-sized drawings, as illustrating the remarks I have just made, and I may mention that these are some drawings from which patterns for the Santiago Market work have been made, and you will see by comparing the photographs of the work as executed how nearly they have been carried out.

II.—FITNESS OF CAST IRON FOR ORNAMENTAL AND ARCHITECTURAL PURPOSES.

It is curious that the use of cast iron for ornamental purposes should be so much condemned by high-class artistic writers, for when we come to consider their objections closely, we find little can be said against cast iron that cannot with equal justice be said of bronze, or any other molten metal; and why a piece of art work which shall be wholly lovely in bronze is to be considered debased and bad art if executed in cast iron, I fail to see, as its mode of manufacture is much the same. Both bronze and iron require a design, then a pattern to be made in some easily-worked material, and a mould taken from the pattern, and finally the molten metal run into the mould; and beyond the intrinsic value of the metal employed (a low ground indeed to take), the value as a work of art is the same (or should be), as there is the same labour of mind and work of body in either case. While there is at the present day a great deal written and said about art, and originality and design, there is still a great tendency to follow the lead of the few, and make it a fashion; and if one or two acknowledged leaders in the world of art say this or that is bad art, this fiat is at once adopted by their immediate followers, and through them quickly accepted by the general public, and it thus becomes a canon of art which it is heresy to disbelieve. Thus, if Pugin, the great reviver of Gothic art, had looked favourably on cast iron, and devoted some of his great skill upon the designs for it, it would probably have been thought as well of as it is now run down and objected to.

Despite Mr. Pugin's and Mr. Ruskin's objections, I feel convinced, as I have before said, that had the great Mediævalists had cast iron they would have gloried in it, and much of the cast work that was done in brass and bronze might have been done in iron; and it is ridiculous to suppose that they would have neglected to use a material so convenient and durable, for they cast brass and used it in their gates, grilles, and tomb canopies, some fine specimens of which still remain in this country (as the gates to Henry VII.'s Chapel), and in Holland and Germany many very superb examples are to be found; and they who so well knew how to use the molten brass would equally well have used molten iron, and instead of having comparatively few examples of their art in molten metal work (brass being very costly), we should have been able to have to rejoice in many trophies of their skill.

I do not mean, however, to contend that cast iron is to be always preferred to wrought—quite the reverse; but I maintain that while each is good in its place, in some places cast iron is better than wrought, as cast iron bears exposure to weather far better than wrought, which quickly rusts and rots away; therefore, for external work—viz., crestings, finials, grilles, railings, &c., cast iron is particularly suited.

But the common expression as regards cast iron is, "Oh, it is so inartistic! so lifeless!" &c. But with whom does the fault lie (if it is so) but with the designer? Ruskin says: "Fine art is that in which the hand, the head, and the heart go together." Let us see how we can apply this axiom to cast iron. In the first stage (in the design) the hand must be skilled in the use of the pencil to obey the head, from whence the thought is conceived, and of which the heart approves, for without the heart is in the matter no good result will follow, whatever may be dictated by the brain. In the next stage, the model, or pattern, there again must be the skilled and practised hand of the skilful craftsman to obey the mind employed in comprehending the design, and the heart making the labour cheerful; and in the last stage there is the moulding and casting, the hand trained to finish the sand-mould; the head, with its knowledge of the proper qualities of the metal to be employed; and the heart, in the willingness to perfect the work as much as possible. We have thus, in all three stages, the three points which are necessary to produce fine art, and they not only go together in each stage, but in the whole, for we can take the three stages thus:—The hand which makes the pattern, the head which designs it, and the heart which completes it by perseverance to the end—*i.e.*, the finished casting. I therefore think that ornamental cast iron, by Mr. Ruskin's own showing, comes under the head of "Fine Art." Again, Mr. Ruskin, writing on the "Work of Iron in Nature, Art, and Policy," has the following, which I quote, as showing how one is led to condemn a material from a dislike there may be to the use made of it. After speaking of what should and should not be done in different materials, he goes on to say:—

> These are the main principles in this matter which, like nearly all other right principles in art, we moderns delight in contradicting as directly and specially as may be. We continually look for and praise in our Exhibitions the sculpture of veils and lace and thin leaves and all kinds of impossible things pushed as far as possible in the fragile stone, for the sake of showing the sculptor's dexterity. On the other hand, we *cast* our iron into bars, brittle, though an inch thick, sharpen them at the ends, and consider fences and other work made of such material decorative! I do not believe it would be easy to calculate the amount of mischief done to our taste in England by that fence iron-work of ours alone. If it were asked of us by a single characteristic to distinguish the dwellings of a country into two broad sections, and to set on one side the places where people were for the most part simple, happy, benevolent, and honest, and, on the other side, the places where at least a great number of the people were sophisticated, unkind, uncomfortable, and unprincipled, there is, I think, one feature which you can fix upon as a positive test: the uncomfortable and unprincipled parts of the country would be the parts where people lived among iron railings, and the comfortable and principled parts where they had none. A broad generalisation, you will say; perhaps a little too broad; yet in all sobriety it will come truer than you think. Consider every other kind of fence or defence, and you will find some virtue in it, but in the iron railing none.

Mr. Ruskin then goes on to say what are the peculiar advantages and beauties of every different kind of fence—such as brick walls, wood palings, low stone dykes, lowland hedges, the wooden handrail, in each and all of which he finds there is some good, pleasant, or noble meaning, and continuing, he says:—

> But what meaning has the iron railing? Either observe, that you are living in the midst of such bad characters that you must keep them out by main force of bar—or that you are yourself of a character requiring to be kept inside in the same manner. Your iron railing always means thieves outside or Bedlam inside—it *can* mean nothing else than that. If the people outside were good for anything, a hint in the way of fence would be enough for them; but because they are violent and at enmity with you, you are forced to put the close bars and the spikes at the top.

Mr. Ruskin then speaks of his admiration of a low wall about three feet high, which he could easily jump over, or lean over to talk to any one outside, and says—

> That is the sort of fence to have in a Christian country; not a thing which you can't walk inside of without making yourself look like a wild beast, nor look at out of your window in the morning without expecting to see somebody impaled upon it in the night. And yet further observe that the iron railing is a useless fence, it can shelter nothing and support nothing; you can't nail your peaches to it, nor protect your flowers, nor make anything whatever out of its costly tyranny, and besides being useless it is an insolent fence; it says plainly to everybody that passes, "You may be an honest person, but also, you may be a thief; honest or not, you shall not get in here, for I am a respectable person, and much above you; you shall only see what a grand place I have got to keep you out of! Look here, and depart in humiliation."

In the foregoing remarks it will be noticed that Mr. Ruskin takes up his condemnation of railings not because they are iron railings only, but also because they are *cast* iron railings. Still, all that has been said will equally apply to wrought iron; and, if railings are wrong, then it is just as bad to have wrought iron as cast. But the point is worth considering—Is it necessary that cast railings should be always upright bars, with pointed spikes, and so high that one cannot jump over or lean upon? Is it not, I say, the fault of the designer and not of the material, that a cast iron railing should be ugly and forbidding?—A cast iron railing or fence can be made to have graceful flowing lines, around and up which climbing plants may twine and add, by their natural beauty and graceful curves, to the elegant fancies of a well-executed design; and, further, to make a railing or fence more to Mr. Ruskin's mind, the top need have no spikes, but have a moulded capping on which he can lean and talk to passers by.

Mr. Ruskin, in the passage I have quoted, seems to crown the horror he has for iron railings by flinging at them what he evidently thinks the worst epithet he can use; he calls them *cast* iron, the word "cast" being printed in italics. I wonder what poor cast iron has done, that it should be treated thus! It is, however, only fair to say that Mr. Ruskin, in continuation of this subject, has written very much to the point (for though these remarks, from the context, evidently refer to wrought iron, they will do equally well as regards cast) when he says:—

> This, however, being, in the present stage of civilisation, a frequent manner of discourse, and there being, unfortunately, many districts where the iron railing is unavoidable, it yet remains a question whether you need make it ugly, no less than significant of evil. You must have railings round your squares in London, and at the side of your areas; but need you, therefore, have railings so ugly that the constant sight of them is enough to neutralise the effect of all the Schools of Art in the kingdom? You need not. Far from such necessity, it is even in your power to turn all your police force of iron bars actually into drawing masters and natural historians. Not, of course, without some trouble and some expense. You can do nothing much worth doing in this world without trouble; you can get nothing much worth having without expense. The main question is only what is worth doing and having. Consider, therefore, if this is not so. Here is your iron railing as yet an uneducated monster, a sombre seneschal, incapable of any words except his perpetual "keep out" and "away with you!" Would it not be worth some trouble and cost to turn this ungainly ruffian porter into a well-educated servant, who, while he was severe as ever in forbidding entrance to evilly-disposed people, should yet have a kind word for well-disposed people, and a pleasant look and a little useful information at his command in case he should be asked a question by the passer by?

These, and the previous remarks, though they refer only to railings, apply also to other works executed in cast iron. The fitness of cast iron for public decorative purposes, has at present, however, been but little tested. With the improvements in the means of protecting iron from oxidation which modern science has supplied, and the facilities in its production, there seems to be every reason for recommending its being employed more extensively in statuary castings, and other works of art, than has hitherto been the case; and while equal, if not superior in strength to bronze, its cost in comparison is trifling.

The production of a work of art in cast iron will tend to increase, and not diminish, the skill of the moulder, in the careful preparation of the mould; for in bronze casting, the nature of the material allows an amount of liberty being taken in repairing any defective part, that iron does not admit of. Hence the production of artistic cast iron work, from the care and skill required in the formation of the patterns and moulds, educates the artizan, and increases his manipulative skill, while the low cost of the material admits of its being thus freely used, and should tend to aid the general cultivation of public taste. The fine skin on the best castings is a proof of the perfection which has been arrived at in the casting of iron, and the superior fluidity of iron, in its molten state, as compared with molten bronze, is another great point in its favour.

That cast iron will ultimately take a prominent position as an artistic material there can be but little doubt, and that there is growing feeling in its favour is evinced by the more frequent use of it in professed works of art, as may be exampled by the lamps on the Thames Embankment (capital specimens of casting), and in a general way by the balconies, roof castings, lamp standards, railings, &c., &c., which here and there appear, many of which are good both in design and execution.

In concluding this second portion of my subject, I would observe, if it is legitimate to use terra cotta (and art writers say it is) in architectural decoration, so is it equally right to use cast iron. Terra cotta is moulded from patterns previously prepared, as iron is. "Oh!" but it is said, "terra cotta is a genuine material, used in the fifteenth century, and is a good honest material, and does not profess to be anything but what is—viz., moulded burnt clay," and so it should be with cast iron; the material is honest enough, and should be honestly treated, which is not the case if it is used to imitate wrought iron, stone, or any other material. Cement stucco itself (perhaps the most abused of all building materials) is good if properly used, and not jointed to imitate stone, nor used as a flimsy screen to hide bad material and workmanship, or like Madame Rachel's enamel, to hide the defects of age. Everything is good in its place, and cast iron is good in *its* place.

III.—FORMS FOR ORNAMENT IN CAST IRON.

Now as to my third point—viz., the principles which should govern the form of ornament used in cast iron.

As I have just said, cast iron should be used *as* cast iron, and not as an imitation of any other material. With this end in view, we must always keep in mind that it is moulded, or rather I should say, formed in a mould (for I take it that the word moulded refers rather to clay or wax, or other similar substance which is moulded or fashioned under the hand of the modeller), and therefore no form should be used in cast iron suggestive of its having been hammered or riveted or wrought into its final shape. Nothing can, I think, be worse than to see cast iron striving to look like wrought. I have here a specimen, well enough cast, which is in every respect all that cast iron should not be; it is to all intents and purposes a wrought iron design, though it was designed for, and intended to be executed in, cast iron by a gentleman high in the rank of architects. I have seen cast ironwork showing a lot of sham rivets and bands, cast in imitation of the rivets and bands of wrought work. If scroll-work ornamentation is used, all curves and sprays and leaves should spring from the main stem in a natural way, growing out of it, and not with the appearance of being fastened on. Thus, for example, if this were executed in wrought iron, it would be done as in Fig. 2, the rivets showing, as it is right they should; but in cast iron the spray should spring out as in Fig. 3. Mark the distinction: in the one A and B are two separate pieces of work joined together by the rivets at C, and in the other A and B are all part of the same piece of work. Again, you have often, I dare say, seen cast scrolls formed as in Fig. 4—a most improper form to my mind—as it is wholly and only suited to wrought iron. The sections which I think should be given to cast iron scroll-work are shown by Figs. 5, 6, and 7, or other similar forms, as suggestive of being moulded and not wrought, as in Fig. 8, as while it is the best form that can be chosen for the pattern easily to "draw" from the sand, it is a most unusual and difficult way of bending a wrought iron bar. Another point there is as to twisted work, that is twisted bars. I think to represent this in cast iron is wrong, as it is essentially an imitation of wrought work. I know it is a tempting form, as it always looks well, and I confess to having committed the same mistake myself; but the consideration I have given of late to what I think are the proper principles on which we should work with regard to cast iron convinces me that it is an error, and a grave one, artistically, to represent twisted work in this material. For what is the effect intended? It is that of a square or any other section bar twisted by mechanical force till it obtains the form shown in Fig. 9, very capital, and easily done in wrought iron, but bad and difficult if done in cast; and though, as I have said in the first part of my paper, many difficulties are thrown in the way of designers by the manufacturers saying this or that pattern will not draw from the sand, yet it is well worth while for a designer for cast iron to keep this point somewhat in view, for if he does he is less likely to make his designs unsuited for cast iron than he otherwise would.

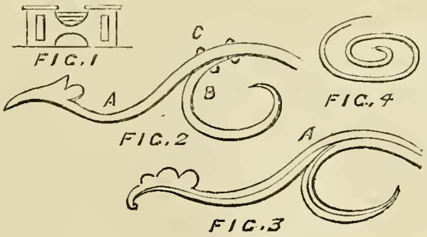

FIG. 1
FIG. 2
FIG. 3
FIG. 4

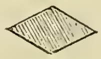
FIG. 5.

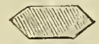
FIG. 6.

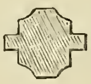
FIG. 7.

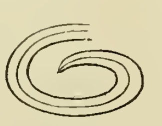
FIG. 8.

I have been told by some whose opinions on artistic matters I value very highly that it is not right to have scroll-work at all in cast iron, as it conveys the idea of its being bent, and therefore wrought. As a mere abstract principle they may be right, but if we are to carry out this principle in its entirety, we must equally object to scroll-work or tracery in stone, on the ground that it gives the idea of its being bent or wrought into the form in which it is presented to us. This reasoning will not, however, apply to twisted work, as twisting is, as I have said, especially a wrought iron form of work, and conveys the idea of labour on the material itself, and therefore is unsuited to cast iron, which should only show the labour already in the mould, as the impression in wax shows the labour in the seal.

If we wish to ornament the main stems of our scroll-work, we can do so by reedings or flutings, following the lines of the curves, giving them an effect of lightness and grace. These readings can be stopped at intervals by either flush or projecting cross lines, as in Fig. 10, which are effective in giving vigour and force by contrast.

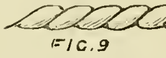
FIG. 9

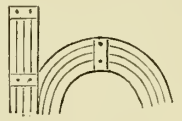
FIG. 10

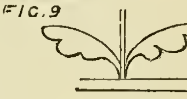
FIG. 11

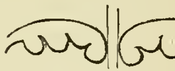
FIG. 12

In foliation I do not think we should, in cast-iron, endeavour to attempt to give it the light and crumpled effect so fine in wrought iron; it should rather be flattened out, and the different veinings or markings scooped or dug out, as they would, in fact, be done if carved in wood.

I think we thus make another point as regards cast-iron—viz., that it is not only moulded, but it is also carved, or rather it represents the impression of carved work; and I think, if we always bear in mind the fact that the model or pattern is generally made first in wood, and suit our forms to what can be well and appropriately done in that material, we shall not be far out in the end as regards the effect of the work when it comes to be cast.

In designing for cast-iron, some judgment and skill is required to so regulate the thickness of parts in such a way that the castings shall not, in cooling, flaw or crack from one part cooling more rapidly than another; for though the careful founder can regulate the cooling of the casting in some measure, yet there is still great risk of failure and increase in the cost of the production.

In the forms used in both cast and wrought iron for architectural purposes, attention should be paid to the position it will occupy; thus, for crestings, your design should be bold and decisive, and so arranged as to be dependent on its outline alone, so that when seen black against a bright sky it shall still look satisfactory to the eye.

In gates and railings, if for external work, foliage, if used, should not be left standing out loose, as in Fig. 11, as it is a temptation to the mischievous to knock the leaves off, but they should be arranged so that they are supported, as in Fig. 12.

In thus giving my ideas as to what I think should be the principles we should work upon, I must confess I am in the position of a preacher who preaches good things, but does not act up to them, as some of my designs will show, for I have often done some of the very things I have this evening condemned; but while preparing this paper some of the ideas I have put forth have occurred to me, which I shall endeavour in future to act up to.

Mr. Driver concluded his remarks by quoting an extract from an article in the *Sacristy*, as it strongly confirmed the views he had taken in his paper on the subject of cast iron for ornamental purposes.*

The paper was illustrated by castings lent by Messrs. Macfarlane, and by specimens of wrought iron work lent by the Skidmore Company. A discussion ensued, in which the President, Mr. J. B. Walton, Messrs. A. C. Pain, R. Fulton, — Young, C. H. Rew (Secretary), and F. E. Cooper took part, and the customary vote of thanks was tendered to Mr. Rew for his paper.

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* This article was quoted at length in the BUILDING NEWS for April 28 last.

CANTERBURY CATHEDRAL.*

THE author confined the bulk of his remarks to the portion of the Cathedral known as Trinity Chapel, and to the Corona, ascribed to William the Englishman, the pupil of William of Sens, the architect of the westernmost portion of the choir. The Englishman, on the whole, seemed to have bettered the instruction of his master, without, however, showing much originality of design or any great advance in detail, saving in the caps of the crypt, which were very clever. Doubtless the planning of the corona was originally the foreigner's idea, taken from the similar arrangement in his own cathedral at Sens, as the general treatment and details were similar in many respects, though simpler, but it was to be regretted that some figure sculpture had not been introduced. After giving a sketch of the history of the Cathedral, abridged from Professor Willis's account of the "Architectural History of Canterbury Cathedral," Mr. Lee described the general arrangement and appearance of the edifice. It was long and comparatively low, and laboured under the disadvantage of having its site almost on a level with the river Stour. A less advantageous spot, artistically considered, could hardly have been selected; yet much of the consequent loss of dignity is made up for by the exceeding beauty of the Angel Tower. The general grouping, as viewed from the hills on either side of the valley, especially from those on the north-east, was very fine; and from the point of view even the wretched western towers, erected in 1839 (in place of the ancient Norman ones, which were too simple and dilapidated to please the architectural mind of the period), became comparatively harmless, and lost much of their debased appearance. The author expressed it as his opinion that the nave, erected in 1380-1410, was by far the finest portion of the church. It was delicate in its detail, grand in its proportions, and simple in its material, and far more impressive and pleasing than the squat hap-hazard division of the bays, the coarse mouldings of overhanging abaci, and annulets projecting into space without any consideration of their effect as seen from below, and the eternal chevron moulding continually cutting away the lines of strength in the arch, and giving in many aspects a zig-zag intrados of a most unpleasing character. Moreover, much of the appearance of the choir was damaged by the Purbeck marble, enough in itself, even when sparingly used, to do away with all breadth of effect. If, instead of spending their funds in this marble (the expense of quarrying, working, and transit of which must in those times have been proportionately far larger and the labour more tedious than at present), the ancient architects had added a few feet more in height, giving more room above the choir arches and triforium, allowing for the effect of the projecting abaci, which in most instances hid the lower half of the triforium arcade, the grandeur of the whole interior would, Mr. Lee considered, have been greatly improved. Entering upon a detailed description of the Trinity Chapel, formerly S. Thomas's Chapel, Mr. Lee said he considered this part of the cathedral the most satisfactory part of the whole building, especially the crypt of the chapel, which showed what our English architect could do when untrammelled by another's disposition and details. The general effect of this crypt and the corona was grand in the extreme, the mouldings bold and simple, and the whole work massive to a degree; the clustered groining ribs springing from the centre column, the support of the shrine and floor over, gave a lightness and yet solidity fully in keeping with the rest of the work. The towers in the crypt had no entry that could be discovered, yet were obviously hollow, as might be seen by small openings on the outside lighting the interior. What mostly struck Mr. Lee in working out this plan was the extremely haphazard way in which the work was laid out; it appeared to have all been done by eye. The buttresses invariably started off at different angles to the transverse groining ribs which thrust against them. These, again, in no single instance hit the centre of the buttress which took the thrust, and in some cases were very wide of the mark indeed. The centre of the corona was about nine inches off the centre-line of the chapel, which completely non-plussed the trusting measurer, who would take one side as a correct representation of the other. The result, therefore, was seen in the groining to the ambulatory of the crypt, which must have caused considerable trouble to the workman. The details, however, were very fine. The caps were unique and well worthy of study, and the way in which they grouped with the massive double columns was extremely fine. The groining ribs were of not unusual mouldings, but were filled in with rubble, roughly carved in some places, worked in herring-bone at apex. The whole had been roughly coated with plaster, which from time to time had peeled off. The plastering in corona still showed traces of painting in parts, consisting of a powdered diaper in red and black on a crown, and ΩΩ for Maria. The ribs betrayed no remnants of colour. There were the remains of a fine pontifical figure in the act of blessing on the westernmost double column on the south side, in red, yellow, and black, and tracings with a point on the ashlar of the west wall of the four evangelistic emblems, boldly drawn. There was also a fine fresco on the vaulting of the chapel under Anselm's tower, under which, again, was another chapel termed John the Baptist's, of which the whole of the walls were covered with Romanesque paintings, now much mutilated and injured by damp, and peeling off rapidly. On the floor of Trinity Chapel the plan became more complicated and the work richer. Chevron mouldings enriched all the transverse ribs in the ambulatory, and the diagonals were enriched with dog-tooth ornament; so, also, the entry to Trinity Chapel, and round all arcading to windows in ambulatory. The effect, though rich, was not pleasing. The main arcade of Trinity Chapel was simpler, and consequently happier in effect. The columns to these arches were mostly marble, some Purbeck, others of a yellow kind; all smaller angle and vaulting shafts on inside were Purbeck, their diameters varying from 9in. down to 5in. The main coupled columns had, in all but two instances, been replaced with stone ones, copied conscientiously from casts under the direction of Mr. Austen, the architect to the Cathedral; but, unhappily, marble detail in carving did not translate well into stone, and the want of spirit of the old work was painfully obvious. The two coupled caps that did remain were fine specimens, though mutilated, and they had quite the feeling of the best quality Early French work in the crockets. The marble paving still remained, though much knocked about, as also a fine mosaic pavement in the manner known as "Opus Alexandrinum." There was also a number of incised stones in the paving, with the incisions filled in with cement, of about the date of the fourteenth century, finely executed, representing, when complete, the Virtues and Vices, the Labours of the Year, and the Signs of the Zodiac. There were now left less than two dozen of this valuable series, and those much damaged, for the most part. In conclusion, Mr. Lee said that the Cathedral was worthy of study as an example of French work done under difficulties in England; but, if the aim in measuring the work of the two Williams be that of improving one's knowledge of architectural design, with the exception of the crypt it would be much better for the student to go to some good example in the north-west of France than to spend much time at Canterbury. But for studying the more delicate works in marble and stone, such as screens, monuments, effigies, &c., there were few cathedrals where the student could find a more varied or richer collection.

After a brief discussion, the best thanks of the members were tendered to Mr. Lee for his paper.

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[*] Abstract of paper read before the Architectural Association, May 5, by Mr. E. C. Lee.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE thirtieth lecture of this course was delivered by Dr. Zerffi at the South Kensington Museum on Tuesday afternoon last. In commencing, he observed that he had, in a former course of lectures, referred to the origin of the Arabs, and described their ethnological characteristics and mode of living, and had drawn special attention to the causes which had produced Mahometanism in the East. In the fourth century the very plan of the foundation of the Christian Church had vanished. Christianity became the ruling religion of the Roman State, and was so changed by the introduction of Pagan festivals, and of heathen gods and goddesses in the form of saints, that the Church was attacked as idolatrous. Christian architecture, undoubtedly, took its forms from those of Rome. The first basilicas were, in fact, Roman courts of justice. The first Church of S. Peter, and that of the Sepulchre at Bethlehem, were buildings of that kind. The capitals were Corinthian, and the ornamentation Roman or Greek, interspersed here and there with crosses. The *aspsis* or seat of the Roman judges was reserved for the elders and clergy. Sculpture and painting were not introduced until after the fourth century. This innovation provoked a fanatical opposition in the East, and Mahomet denounced as idolators all those who produced images or representations of God or His works, in the same sense as in the fourth chapter of Deuteronomy, v. 15-18. In the West, the images and carvings served to civilise the rough and wild Teutons, who delighted in these outward signs. The old Teutons themselves had but few festivities, and these had chiefly referred to changes in the seasons. The Feast of Fools, the Roman festival of the January calends, was at an early period celebrated throughout Christendom. The Feast of Asses, in commemoration of Balaam's ass, was not less universal. In both these festivals a large field was left open for the reintroduction of the Dionysian and Bacchanalian customs, together with Eastern and Jewish emblems and figures. Jews and Gentiles took part in the processions; Virgilius Maro was represented as walking arm-in-arm with Nebuchadnezzar, and the Apostles as surrounded by sybils. The object of these mummeries was good, as on such occasions the catholicity of the new faith was proclaimed; but the manner in which the idea was carried out must have been repulsive to many stern and ascetic spirits in the church. Art was brought to the level of buffoonery and caricature by these festivities, and language and poetry became no less degraded by them; their influence, however, was not entirely bad. They produced life and movement, which were always to be preferred to a despotically imposed propriety which was not the outgrowth of genuine and natural moral laws. On the other hand, it could not be denied that these customs had done more to produce the terrible rupture between the Eastern and Western churches than even theological disputes. In the bright and sunny Eastern climate, surrounded by all the beauties of a bounteous Nature, it was easy for man to dispense with carvings and processions; in the gloomy North-west of Europe, however, where the imagination was bent on mysticism, this was much more difficult. This distinction between the people was expressed with the utmost clearness in their art. In the conceptions of the Middle Ages, monstrous though they were, we saw the germs of a future high art, destined subsequently to develope into the masterly and perfect creations of a Michael Angelo. Mahometan art, on the other hand, exclusively occupied itself with the decoration of flats, and brought that branch of art to perfection. The Mahometans were the artists of the desert. The dark-blue sky studded with innumerable glittering stars; the crescent brilliantly illuminating the balmy nights of spring, summer, or autumn; the oasis covered with resplendent verdure, and the rose-prairies of the Persian highlands, deeply influenced them, and made them see the world as through a prism. They were happy in inanimate nature only. From life, sorrow, care, and grief were inseparable, but crystals and flowers would only yield delight. The imagination of the Eastern artist was fettered, and though he had produced works of inexpressible beauty (and was our master if we wished to become thoroughly acquainted with good wall or floor decoration, as we could not do better than adopt his principles), he still remained always monotonous and limited in motives. Mr. R. Redgrave, in his excellent report on the Exhibition of 1851, most justly recommended the study of Eastern art, but some ornamentists had read his words in the same spirit as that in which the Mahometans had judged Christian art, and despised everything that was not an illuminated text or a mere interlacing of lines producing geometrical forms. If these ornamentists could not give us, together with their ideas, the minds, modes of thinking, and customs of the Mahometans, we should certainly never adopt their exclusively geometrical ornamentation. We must, however, admire the Mahometan mosques, and could not help being enchanted by the perforated slabs used as windows. The sun or moon shining through these patterns adorned the dark rooms with beautiful designs. This perforated or lattice work was often seen on the fountains in the courts of the mosques, and the patterns reflected on the rippling water had an admirable effect. The study of colours, and a correct appreciation of various tints, was the most distinguishing feature in all Eastern ornamentation. This was to be observed in the carpets from the East, of which Mr. Redgrave said that they were generally designed with a flat border of flowers of the natural size, and with a centre of larger forms conventionalised, in some cases even to the extent of obscuring the forms—a fault to be avoided. The colours were negative shades, of a medium or half tint as to light, and dark tending rather to dark with scarcely any contrast, and therefore a little sombre in character. Three hues were principal, and largely pervaded the surface—viz., green, red, and blue; these were not pure, but negative, so that the general effect was cool, yet rich and full in colour The colours, instead of cutting upon each other, were mostly bordered with black; the blue had a slight tendency to purple, and a few orange spots enhanced and enlivened the effect. The distribution of colour in these fabrics was far simpler than in those from

India, which admitted a larger proportion of warm neutrals, as brown and brown purple, and also a greater variety of colours. The colour of the Indian carpet was so evenly distributed, and each tint so well balanced with its complementary and harmonising hue, that the general effect was rich and agreeable; the hues all tended to define the geometrical arrangement of the forms. As colour became more and more an essential element in the development of art, it was as well we should make ourselves acquainted with it from a higher point of view. Colours might be studied in three different ways—viz., physiologically, physically, and chemically. In the first they presented themselves as ever-changing; in the second as transient, though stationary for a time; and in the third as fixed. Colour, from the moment when the rainbow first appeared in the heavens, possessed an all-powerful charm for mankind. That colour had an influence on the animal world was evidenced by the rage expressed by a bull at the sight of red. Children, like savages or uneducated persons, always delighted in bright colours. Blacks preferred white hats; whites preferred black hats. The inhabitants of the Southern hemisphere indulged in bright and lively colours, and loved to have those colours as variously and unharmoniously mixed as possible. The artists of these regions had, however, studied the harmony of colours to perfection. The Germans preferred blue, the English sombre colours, and the French light and lively colours. This went even farther. Young ladies preferred pink, light-green, white, and magenta; elderly ladies brown, dark-blue, violet, and mauve. Violet and bright yellow were more pleasing to the blonde, blue and orange to the brunette, and purple or white to the dark. The primary colours were more used in the Southern hemisphere, whilst in the North the secondary, negative, or cold colours abounded. The warm yellow was exhilarating. Gold was yellow, and always produced an agreeable impression. Orange was still livelier. Vermilion, or red, were preferred by savages and children. The cold colour blue had something of a shade in it; this beautifully soft, bright, and yet dark shade had the most soothing influence on us. There was a charm in the cold and quiet aspect of the blue firmament. This colour was not so much impressive as elevating. A correct theory of the arithmetical proportions of the primary and secondary colours in their different combinations to produce the best possible flat decoration of surfaces, deduced from the best oriental patterns of ornamentation, was minutely detailed by the lecturer, and illustrated by a large number of beautiful diagrams from the Art Library, and by several objects from the Museum collections.

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THE WATER SUPPLY OF CROYDON.

MR. BALDWIN LATHAM, the consulting engineer to the Local Board of Croydon, has just published a report on the water supply of Croydon. It appears that the present waterworks, which were constructed to supply 2½ millions of gallons daily, will not long meet the increasing requirements of the population unless measures for the prevention of waste are adopted, or additional waterworks constructed. Two causes of waste are named by Mr. Latham. First, that due to the negligence or culpable carelessness of private individuals; and the second, owing to the defective and unsatisfactory condition of the wrought iron service pipes which have been laid down for a number of years. Water waste preventive cisterns are recommended for the purpose of checking the first; and to avoid the second Mr. Latham advises the removal of the old iron pipes, and the substitution for them of lead service pipes. This advice is based on a series of experiments conducted by him with regard to the durability of various materials used in the construction of pipes. A portion of soil was taken from a district in Croydon known to have an effect upon pipes when laid in it. A small quantity was placed in an earthenware jar, and two short lengths of pipe were buried in it, the action taking place in the soil through a long period being artificially produced by distilled water containing a small per-centage of nitric acid. After forty days, the order in which the pipes stood the test was as follows:—Block tin, lead, enamelled iron tube, tin-lined lead, composition, Lavenant enamelled iron tube, plain iron tube, and galvanised iron tube. The expense of block tin renders its adoption out of the question, and it seems likely therefore, that lead will be chosen, should the Croydon Local Board act on the advice of their engineer, especially since Dr. Odling is satisfied that the Croydon water may be conveyed in leaden pipes without any risk either of contamination of the water or corrosion of the pipes.

THE PORTOBELLO PIER.

THIS work is now so far completed that as soon as the Sheriff shall have certified the pier to be "fit for the purpose intended," the directors will announce the opening day, arrangements for which are already in progress. When the undertaking was commenced in April of last year, it was computed that the pier would be ready for opening in August last, and the contractors bound themselves, under a penalty of £5 per day, to have the work completed by the first of that month. Time has shown, however, that it was impossible to finish the pier by that date The heavy portion of the work was the sinking of the pile pillars into the bed of the sea. The first was sunk on the 15th April, 1870, but as the work progressed, difficulties increased. The pier is a substantial structure, and stretches from the promenade into the water to a distance of 1,250ft. The main body of the pier is 1,080ft. in length, and 22ft. in breadth, the remaining length of the structure consisting of the pier-head, 60ft. broad. The pillars on which the flooring of the pier rests are ninety-six in number, twenty-four of which are 12in. in diameter, and seventy-two 9in. They are mostly in 10ft. lengths, and are joined to each other by means of screw bolts through projecting flanges. The process of sinking the pillars into the bed of the sea was interesting. The sinking end was shod with a toothed nozzle, into which was inserted an iron tube, which in turn was connected by flexible hose to a hydraulic pump filled from a pipe running into the sea. The water thus forced downwards at the nozzle cleared away the sand for the boring, which was carried on by a forward and reversing movement of a horizontal unequal-shafted manual lever. Wrought-iron girders surmount the pillars on each side, connecting them along the line; and long metal rods, which stretch across the breadth of the pier, impart additional strength and solidity to the structure. There is a saloon at the seaward end of the pier, with a promenade over it 70ft. by 60ft.

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THE CONFERENCE OF ARCHITECTS.

ARRANGEMENTS are being made with a view to enable gentlemen attending the Conference to obtain access to certain objects in the metropolis of special interest to architects, both by way of facilitating inspection at all times in the day-time upon the presentation of cards, which may be had at the rooms of the Institute, as well as by organised visits at an appointed time under the guidance of a *cicerone* possessed of special knowledge of the object visited. Of the former may be named the collection of water-colour copies of the Italian frescoes at the rooms of the Arundel Society; among the latter, the Albert Hall and Memorial, the British Museum, Lambeth Palace, S. Thomas's Hospital, Westminster Abbey, and other places are spoken of. Particulars will be published in a few days. These intended visits will doubtless add much to the interest of the Conference week; the presence of their friends will afford to London members just that amount of additional interest for lack of which things that may be always within reach are always neglected; and having the matter previously arranged will doubtless save much valuable time to those who come from a distance, and may have to make but a limited sojourn in town.

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PROTECTING WATER-PIPES.

IT is self-evident that as far as practicable all iron water-conduits should be protected from oxidation, not only to provide against the premature giving way of the metal, but to secure the scarcely less important *desideratum* of avoiding any undue roughening of the internal surface or the diminution of the bore by the accumulation of rust. The prevention of these evils is neither easy nor common, and the detriment occasioned by them can in many cases hardly be computed. We have heard it stated by those apparently well qualified to judge that the want of "head" experienced with the water supply of New York city is in a great measure due to increased friction of the water flowing in contact with the corroded surfaces. Of means more or less capable of preventing the results just referred to, that most approved, says the *American Artizan*, has comprised the simple coating of the surfaces with a tenacious varnish. That used on the pipes of the Cochitnate Water-works in Boston withstood a ten years' test, and at the end of the time the pipes "were found to be almost free from rust or ochreous deposits." It was composed of coal-tar, distilled until the naphtha was wholly eliminated, and the tar or pitch brought to about the consistency of wax. The tar reduced to this condition was heated to three hundred degrees, a temperature at which it was kept during the dipping operation, and about eight per cent. of linseed oil added to it. The pipes of cast-iron were heated to a degree determined by the judgment of the engineer in charge, and immersed in the prepared tar for from thirty to forty-five minutes, at the expiration of which they were placed in such position to drip that the remaining layer or coating of the material should be of uniform thickness. This method of protecting the pipes, now exclusively adopted in the water-works of most of our cities, is undoubtedly much better than nothing, and its advantages, like those accruing in California from the coating of wrought iron pipe with boiled asphaltum, far in excess of its cost; but, despite the freedom from oxidation claimed for the Cochitnate pipes, it is quite possible that better and more permanent results can be gained by other and dissimilar means, especially those which would furnish the interior of the pipes with a mineral covering of appreciable thickness, and of a character not liable to any change from the action of the water.

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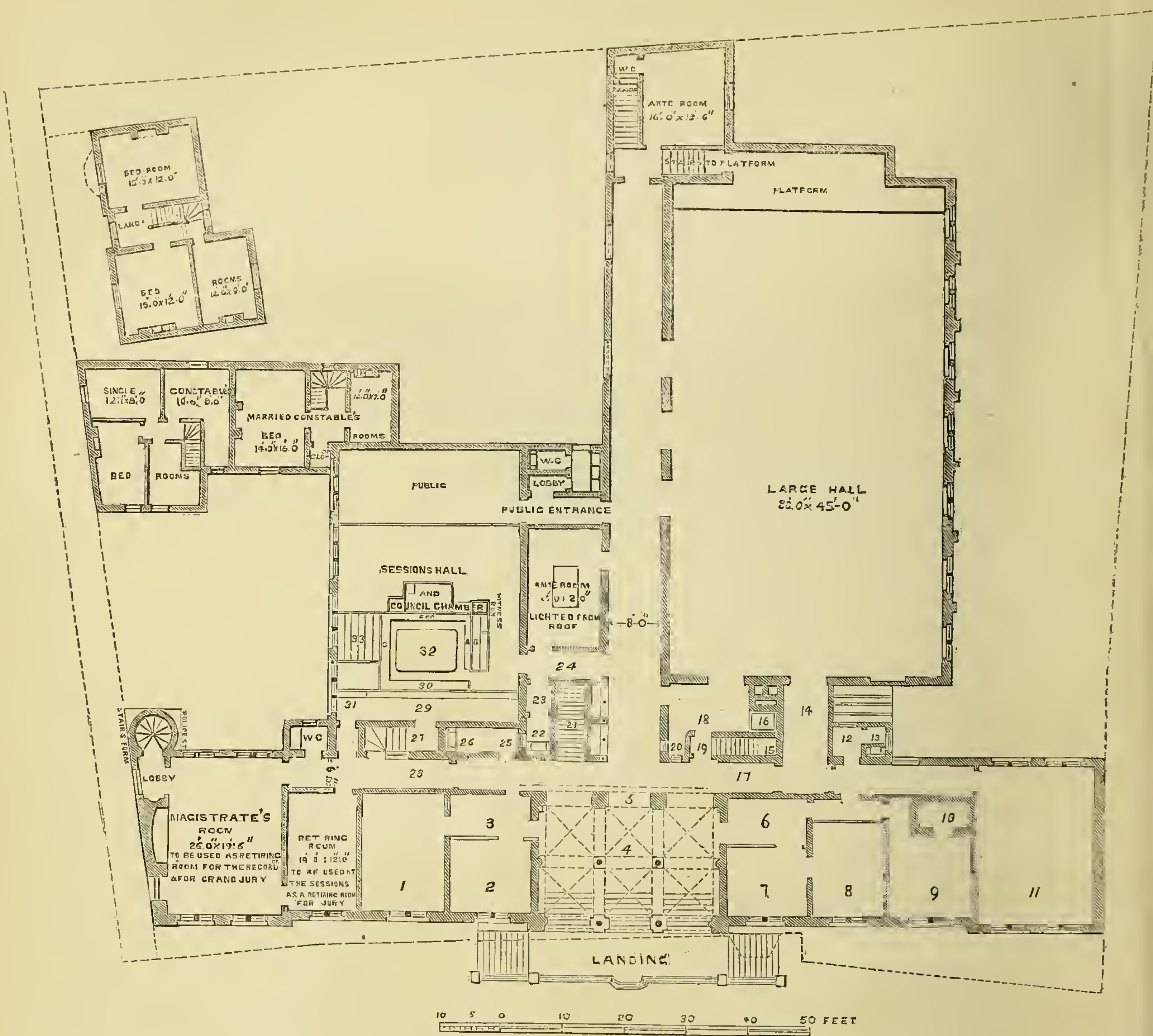
THE THAMES EMBANKMENT.

MR. GORE, of the Office of Woods and Land Revenues, has made a report to the Treasury on the subject of the arrangement made when the Thames Embankment Act of 1862 was passed. A valuable concession, he says, was made in favour of the ratepayers, and on the other hand, the Treasury judged it to be right to reserve to the Crown and the Consolidated Fund the parts of the bed and foreshore of the river belonging to Her Majesty, to be severed from the river by the Embankment. He states the quantity of land belonging to the Crown, situate between the outer wall of the Embankment and the old line of high-water mark, at about 10¾ acres. Rather more than half of this was surrendered to the Metropolitan Board, without any money consideration, for the site of the Embankment and roadway; some small pieces were added to Somerset-House and the Board of Control, or sold for the extension of Whitehall-place; more than two acres were demised to the lessees of the houses in Whitehall-gardens, &c., as garden ground; and rather more than 2½ acres are not yet appropriated. With regard to this last, he says that the Metropolitan Board have not, and never had, any interest in it. He proceeds as follows:—"The condition under which the land has been filled up and was to be fenced formed an integral part of the arrangement between the Crown and the Consolidated Fund, on the one hand, and the Metropolitan Board on the other hand; and that arrangement was fully considered by the Select Committee of the House of Commons to which the Bill was referred, and finally adopted by Parliament. If that arrangement had not been entered into it would have been necessary for the Metropolitan Board to have made a money compensation to the Crown, and to the Consolidated Fund for the whole of the Crown land required for the purposes of the undertaking, and also for the rights of water frontage belonging to the Crown and the public that were extinguished by the construction of the Embankment. The Crown and the Consolidated Fund have carried out the arrangement in question, so far as they are concerned, and the rights and property of the Crown property, that were required for the purposes of the undertaking, have been surrendered to the ratepayers without any money payment. In return, and by way of exchange, there was secured to the Crown and the nation at large the improved value of the Crown land intervening between the old water-line and the Embankment roadway, consequent upon the reclamation effected or aided by the Embankment. The arrangement was deliberately sanctioned by Parliament in the Thames Embankment Act, 1862; and I venture to submit that it was a fair and reasonable settlement as between the Crown and the general public interested in the Consolidated Fund on the one hand and the metropolitan ratepayers on the other hand." Mr. Gore observes that it has been urged recently that so much of the land reclaimed at the cost of the ratepayers of the metropolis as may be in front of the ancient line of buildings should be devoted to the purposes of public recreation and amusement; and that proposal would appear to be intended to apply to nearly the whole land reclaimed between Westminster and Blackfriars-bridges. But part of the land has been sold to the railway company; part is vested in the trustees of the societies of the Inner and Middle Temple; part has been demised to the lessees of the frontage houses. These various interests were created under arrangements advantageous to the ratepayers. No suggestion appears to have been made as to the source from which funds are to be provided for the purchase of those interests.



PLAN OF PRINCIPAL FLOOR

WINCHESTER GUILDHALL, &c.

A SHORT time since we offered some criticisms on Winchester Guildhall competition, and we this week give illustrations of the design to which was allotted the first premium. The architects are Messrs. Jeffery & Skiller, of Maidstone. There is every reason to believe that the competition was a fair one, and consequently Winchester in such matters contrasts favourably with some cities. The arrangements and principal dimensions of the proposed building are as follows:—The principal floor is approached by the double flight of steps. The large hall, eighty feet by forty-five feet, is adapted for concerts, lectures, &c., and attached are three ante-rooms, one being fitted as a serving-room, with lift from kitchen, to be used on the occasion of public dinners. The municipal offices comprise three offices for town clerk, and two for the borough surveyor, and large committee room, sessions court, and council chamber with movable fittings forty feet by thirty feet, magistrate's room, and retiring-rooms, all with lavatories, waterclosets, &c., attached. The basement is arranged for police apartments, cells, fire engine, armoury, large kitchen, hall-keeper's residence, coal stores, and vaults, &c. The whole of the first floor is devoted to library and museum purposes. The total frontage of building next High-street is about 150 feet, and it is proposed to be executed in Bath stone, with red Mansfield bands and columns. The tympana of arches will be sculptured to illustrate important events. The statues will also represent benefactors or illustrious persons in connection with the past history of the city of Winchester.

References to Plan.

1	Clerk's Drawing Office.	18, 19	Serving Rooms.
2	Borough Surveyor's Private Office.	20	Ticket Box.
3	Waiting Room.	21	Staircase.
4	Entrance Hall.	22	Water Closet.
5	Gates.	23	Lobby.
6	Waiting Room.	24	Private Entrance.
7, 8	Offices.	25	Lobby.
9	Town Clerk's Private Office.	26	Water Closet.
10	Strong Room.	27	Steps to the Bench.
11	Committee Room.	28	Corridor.
12	Lavatory.	29	Bench.
13	Water Closet.	30	Clerk's Desk.
14	Corridor	31	Door for Jurymen.
15	Hall Keeper's Staircase.	32	Table.
16	Lift.	33	Jury Box.
17	Corridor	A	Barristers.
		B	Attorneys.
		C	Reporters, &c.

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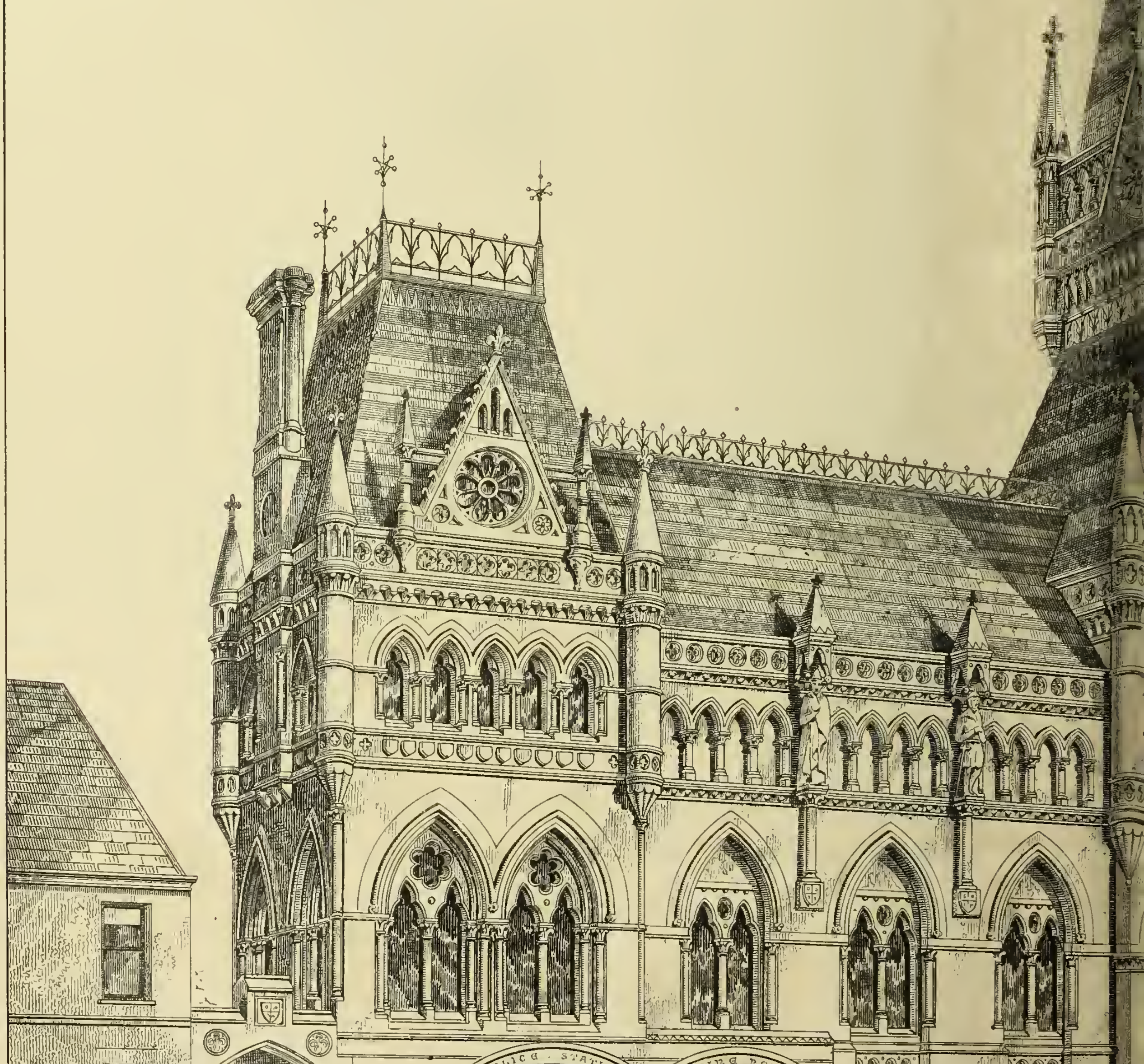
THE FALL OF THE VENDOME COLUMN.

THE Column of Victory in the Place Vendôme has fallen, after an existence of rather more than sixty years. The Parisians are apparently afraid that the bombardment may not do damage enough to the art monuments of Paris, and probably if the Commune exists another week the novel feat of hauling down monuments *en masse* may be repeated, to the gratification of the roughs and the danger of the houses.

The Column, erected in honour of the Army by the First Napoleon, was begun on the 25th of August, 1806, and finished on the 15th of August, 1810, under the direction of D. V. Denon, J. B. Lepère, and L. Goudom, architects, at a cost of one million five hundred thousand francs. The shaft and the pedestal were of stone The bronze bas-reliefs, which ran upwards in a spiral form outside, represented, in chronological succession, the incidents which intervened between the departure of the troops from Boulogne and the victory of Austerlitz. These bas-reliefs were cast out of 1,200 pieces of cannon taken from the Germans and the Russians, the metal weighing 360,000 lb. The Column was an enlarged copy of the Pillar of Trajan at Rome; but, as a work of art, had not much merit. On the pedestal were representations of the conquered troops, with their uniforms and weapons, and at each of the four corners was placed an eagle. The statue of himself, which Napoleon caused to be placed on the summit of the column, was removed at the restoration of the Bourbons. Louis Philippe, for the gratification of the army, reproduced and re-erected the statue in 1833. This second statue, which differed from the first, and was cast from cannon taken from the Arabs, appears not to have pleased Napoleon the Third, who removed it, and erected in its stead another, copied from the model of the original. which represented the "Little Corporal" clad in Roman Toga and laurel-crowned.

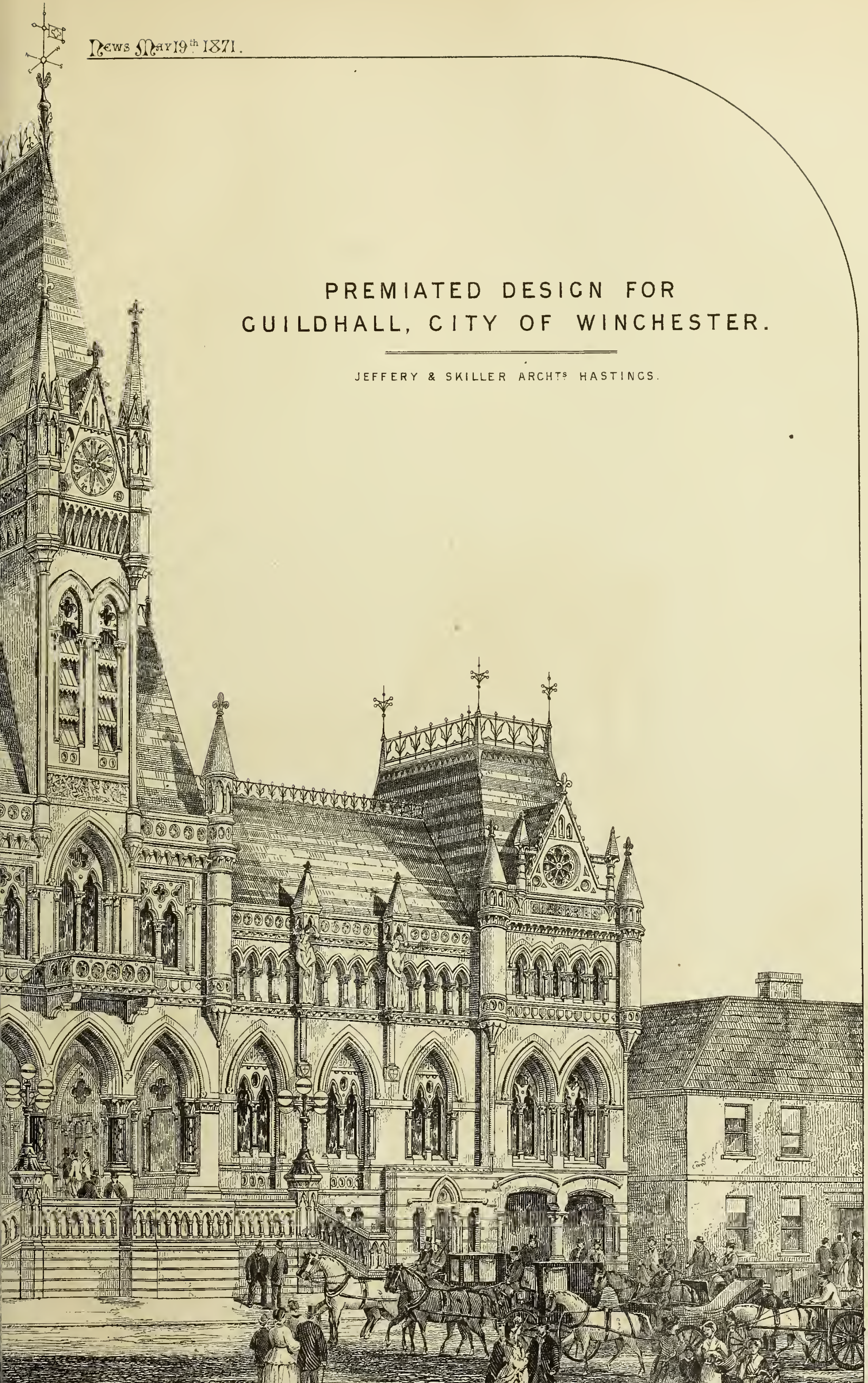
It is worth remarking that a colossal equestrian statue of Louis the Fourteenth was erected in 1669, in the Place Vendôme, which in 1792 was overturned and melted down by the Revolutionists.

VIEW OF FRONT FACING HIGH STREET.



H Abbott Lith

News May 19th 1871.



PREMIATED DESIGN FOR GUILDHALL, CITY OF WINCHESTER.

JEFFERY & SKILLER ARCHTS HASTINGS.

Printed by Whiteman & Bass

Furniture and Decoration.

FURNITURE AT THE INTERNATIONAL EXHIBITION.

ONE of the first lessons taught in grammar is that two negatives can never make an affirmative. Would that our designers of furniture might learn that a like rule applies to their work! If one dragon be but an indifferent ornamental creation, tying two back to back may make a symmetrical composition, but does not render more attractive the nature of the creatures. Yet, to plaster butter upon bacon remains still, unfortunately, the normal ideal of our cabinet-makers and upholsterers in general. We notice, indeed, with pleasure some efforts in quite a contrary direction, and can perceive that the aid of architects has evidently been sought by more than one firm. It may be thought that in this we assume more for the profession than is strictly due, and that the credit might be given at once to the manufacturers themselves. Were the names of the designers in all cases attached to the articles themselves, there would be no difficulty in ascertaining the correctness of our views on the subject, and we think it is to be regretted that the Commissioners did not insist upon so obviously desirable a condition. In justification, therefore, of what we have advanced, we would call attention to the strange variety in the character of the articles exhibited by the two firms of Messrs. Gillow and Messrs. Trollope. Some elaborate and costly specimens sent by each house are of the ordinary jog-trot, clumsy, and inartistic, vernacular class of furniture, while others, to which we shall direct notice, are novel and thoughtful works of a far higher and advanced style. We hope that the success which these latter efforts deserve will be attained, and lead to their gradual supercession of their old-fashioned competitors. With these few preliminary general remarks, we shall pass to our review of the individual contents of this department of the exhibition. In West room No. 7 are two Gothic oak doors, exhibited by Mr. Britcher, designed and carved by Mr. G. F. Copping, joiner for Lord Stafford, very rich in general effect, delicate in execution, and full of variety in detail; but the way in which the mouldings are mitred and cut to a feather edge to fit the slopes of the sills of the panels is modern, and not Mediæval in treatment, and objectionable. Messrs. Gillow have an ebonised dossal with a ribbed cove to support the cornice, divided into panels filled with stamped leather, the raised ornaments enriched with colour and relieved by a gold ground. The lower sides or jambs of the dossal are arranged in ornamental panels, decorated with incised gilt lines, with a centre occupied by painted heads and embossed brass shields. The effect of the whole is quiet and satisfactory; the character of the design is Elizabethan. The object of this dossal is to form a background for some oak furniture, consisting of a sideboard and two chairs, which are quite worthy of their framework. The *motif* for the sideboard has been taken from the Elizabethan woodwork with very delicate mouldings. The mixture of some of a decided Gothic character, and good of their class, with some carving of the same nature, together with others of very indifferent Classic, is an anomaly which escapes notice from the exceeding minuteness of each. Rows of bobbins connect a lower rail with a quaint effect. The panels are of box-wood, with a line of ebony round each, and they are carved with animals, birds, fishes, fruit, and diapers. The effect is severe, but we think not very striking in comparison with the cost, nor do we think it is likely to be popular. The straight-backed chair on each side is in admirable harmony, and has a richer appearance from the stamped and gilt leather with which the seat and panel in the back are covered. Another equally delicate but more effective cabinet is exhibited by Messrs. Collinson and Lock. It is of ebony, enriched with ivory and red, and panels with figures in ivory-white and brown dresses upon a red ground. The form is good, and the detail affects the same delicacy of moulding as Messrs. Gillow's, and a character also partaking of a refined sort of Elizabethan. We can commend the taste displayed in this cabinet and in the chair which accompanies it. The embossed leather panel in the latter is a beautiful picture, which we should fear to lean back against. It is fitter for a panel to a cabinet, and seems out of place as used, and is not quite in harmony as to colour with that employed for the seat. Another cabinet of a very different description, by the same makers, Messrs. Collinson & Lock, deserves attention. It is of satinwood, with painted decorations, but the two upper doors in the centre are of black plate glass in small panels, divided by gilt bars. The effect of this is too startling in point of contrast. Although there is much to commend in this specimen, and nothing approaching what is vulgar, it is more ordinary and commonplace than the darker cabinet by the same makers. Messrs. Gillow also have an ebonised high cabinet, with two carved light wood panels in the doors of the upper part, which are well carved with a female figure and two amorini in each; delicate inlays and Amboyna wood enrich the rest. The effect is harmonious, but not novel or remarkable. A cabinet in carved ebony with niches to hold two vases by the same firm, but by another designer, is of the old-fashioned pretentions description. Messrs. Jackson and Graham have two arm-chairs, which have little to recommend them except, perhaps, novelty, though we should be inclined rather to say strangeness. A toilet-table, lent by R. Hunter, has an ugly glass frame, but the effect of the drawer fronts of the pedestals is charming for refinement of colour. Lovely little plaques of Wedgwood ware, with white figures upon greyish-blue ground, are let in at intervals, and each is surrounded by a line of ebony and band of red zebra wood in a panel of hare-wood, with borders of satinwood. A sort of wardrobe and toilet-table combined, by Mr. W. Walker, of satin-wood, inlaid, and with ivory furniture, is comparatively ineffective, and inelegant in shape. A small cabinet, by Messrs. Trollope, of black, inlaid with ivory, in the Florentine style, is effective, but the ornamentation very commonplace. Some ormolu-mounted buhl furniture is exhibited by L. Mignienne and Messrs. Wertheimer; this is of that vulgar and ostentatious, but inartistic, class of work in which we cannot affect to feel any interest whatever. A large cabinet, by Messrs. Jackson and Graham, of ebony, profusely inlaid with ivory, and with occasional bosses of lapis lazuli and marbles, is more refined, and certainly handsome, but has little in point of artistic treatment to repay the vast labour lavished upon it. A chair, exhibited by Messrs. Collinson and Lock, ebonised and gilt, and covered with embroidered velvet, does credit to its designers, J. M. Smith and F. V. Hunt. Another very good chair is exhibited by Mr. C. Bevan. He calls it an ebony library chair, covered in embossed morocco. It has strength where it is needed —at the point of junction between the seat and the back—and the legs and rails are well connected; the treatment is Mediæval. In the next room, No. 9, we find a work which affects a higher style of art, inasmuch as it has three large painted panels with the inscription, "May-day, May-day, the blythe May-day, the merrie, merrie month of May." There is, however, no harmony of treatment between the woodwork and the paintings. The latter must be looked upon independently, and are very well in their way, except that they are painted upon slabs of porcelain so thin that the centre one has been broken already. The absence of glass is commendable; the wood framework of walnut is heavy and commonplace. A toilet-table, by A. Foley, is miserable in form, colour, and construction; the elaborate stretcher, supporting a vase which it is not competent to bear, is to pieces already. Near it stands a not much better satin cabinet, with indifferently painted arabesques. In the centre of this room stands a pretentious architectural erection, intended for a sideboard, by Messrs. Trollope. It might as well have been executed in stone as in wood; the conception of the whole is absurd. An ebony cabinet by the same firm standing near is better, but heavy and commonplace. The same remark would certainly not apply to the neighbouring cabinet, also by Messrs. Trollope, but by a different designer, in a style which would appear somewhat too modern and Victorian, while their other contributions we have noticed are too old-fashioned. This, however, has many good points, and is effective, but somewhat too loud. The material is deal, and the ornament obtained by stains by the xylatechnagraphic process. Baskets of flowers in the panels, thus executed, are certainly striking examples of what may be done in this manner. A far better cabinet of the same description, by the same firm, stands opposite this on the other side of the room; this is in good tone. A more artistic example of the same class of work, and one much to be commended, is a pianoforte standing in the centre of this room exhibited by Mr. J. Gamble. It is decorated by Messrs. Wornum with figures and other ornaments in the way we have described above. A pier table, in white wood, with pendant wreaths of carved flowers, might rival Grinling Gibbons's work; but one would fear to approach it in a room unguarded by a railing as here—a breath would blow away the petals. As ornament, of course, such work is quite a mistake. This table supports an Italian ebony cabinet, inlaid with ivory, a style of work suited to an object of this size and character, and here treated with quietness and reserve. In the corner of the room is an effective encoignure cabinet in the Renaissance style, by L. Frullini. The grounds of the ornament in the pilasters is gilt. A carved walnut cabinet by F. Wirth, in the same style, calls for no special remark; it is in the Austrian version of Renaissance, now so well known, but which has no very distinctive or admirable character. A clock-case by Cortelazzo, resembling a triumphal archway, is of the same class. Lady Emerson Tennant has lent an ebony sideboard executed in India "after a European design." The European share in the work is not the best, but the Indians have managed to get some little native pluck into the details. So also have the Japanese into a wonderful straw-faced cabinet lent by Lady Rutherford Alcock; the raised plumage on the storks is very fine. There is one quality which is more or less characteristic of all classes of work in this department, whether English, foreign, or oriental. This is the admirable mechanical execution of the several works. There are some tables which we have not noticed scattered about the picture galleries which almost rival in mere point of workmanship the Japanese storks above mentioned, but unfortunately this excellence is lavished upon utterly unmeaning and comparatively uninteresting forms and designs. We fear it is this lower quality of high finish which is mainly attractive to both the public and the producers of this class of manufactures. It arrests the mind from the search after high aims. Still, upon the whole, we have found a sufficient degree of appreciation for the better and more artistic specimens exhibited in this department, and we hopefully look forward to the working of the new leaven, the existence of which we have been pleased to be able to point out.

GILDING AND ORNAMENTING ON GLASS.

BY AN EXPERIENCED WORKMAN.

(*Continued from page* 304.)

HAVING described some of the innumerable uses to which this work may be put, we now proceed to point out the best methods of working. Gilding on glass differs from all other kinds of gilding. In gilding by any other process the medium, or size, for securing the gold-leaf on the object to be gilt is invariably laid on first, and when the size has arrived at a certain state of dryness the leaf-gold is applied, and thus the surface of the gold is left clean and free from any foreign body. But in the process of gilding on glass. the size, or medium, is on the surface of the gold, between the leaf and the glass, and consequently can only be seen through this medium. It will be at once evident that the clearer and more transparent the size, the more brilliant the gold will appear through the glass. All kinds of transparent gelatinous substances and numerous methods have been tried to attain this desirable object in the best manner, and with varying success. We ourselves have tried all sorts of things, but have not yet found anything to answer the purpose so well as pure isinglass. Some writers add whiskey, spirits of wine, and other spirits, but we discard all these things, and use the purest isinglass, prepared in the following manner: Procure (from any respectable chemist) some of the best Russian isinglass; if good, it will be colourless, and will all dissolve in water. Put a pint of rain water into an ordinary enamelled pan. Let the water boil. and then skim off any scum which may arise to the surface. Now add a few shreds of the isinglass; let this dissolve. and it will be found, when this has taken place, that an additional scum will rise to the surface, which must be taken off with a clean tablespoon. The water will then be purified, and free from any other matter but the pure isinglass, and will have a slight yellow tinge. The size must now be strained or filtered through the best white blotting-paper, such as the chemists use for filtering, into a perfectly clean basin, or other glass or earthenware vessel; when cool it is ready for immediate use. It must be clearly understood that no success can result, either in making the size or in the working, except the greatest care is taken that everything used in the process is perfectly clean and free from the slightest trace of impurity. A camel-hair flat tool in tin may be used for laying on the size, care being taken that the same is clean and free from dirt. The gold-leaf used for gilding on glass is the ordinary gold-leaf of commerce, but should always be placed in white books. Gold-leaf as a rule is placed in small books about 3½in. square, containing twenty-five leaves of gold; the paper is rubbed over with red ochre or rouge, in order to prevent the gold from sticking to the leaves, which they otherwise would do, and the gold be thus wasted. Now a portion of this rouge naturally adheres to the leaf when it leaves the book, which in ordinary gilding is of course dusted off while manipulating it, and the surface of the gold is thus freed from the dust; but if this gold is used for gilding on glass, the rouge is placed between the gold and the glass, and thus its brilliancy is injured, and it appears streaky and spotty. This is a fruitless source of failure and disappointment. To obviate this it is best to have the gold-leaf put into clean white books, without rouge or any other powder; but there is a difficulty in this, inasmuch as if the gold be kept long in these books, it is apt to stick to the paper, and the gold is wasted; it is, therefore, necessary that the gold should be ordered from the gold beater shortly before being used, and if kept any time, both this and all other kinds of gold-leaf in books should be kept in a perfectly dry and warm place, and should there be any suspicion of dampness, it should always be placed in a warm oven, or other place, to drive out the damp. The same rule applies to silver-leaf as well. The glass to be gilt will require to be perfectly clean; this may be ascertained by breathing upon it—if the moisture from the breath flies clean off without leaving any film behind, we may conclude that the glass is clean. The design must now be put upon the opposite side of the glass to that we are about to gild, either by pouncing, or by applying the tracing or design, as before described. The glass must now be placed upright, with a slight backward lean; the bottom edge should rest upon as small a surface as possible. Two small wooden pins fastened on a flat board, or the pins of an ordinary easel, will do. If the bottom edge of the glass rests its whole length upon a table or shop-bench, the size as it runs on the table is apt to rise again and run up the glass, and carry dust or other impurities with it from the bench; on the other hand, if it rests upon two pegs, the size runs away clear.

The gold-leaf is laid on the glass in the ordinary manner, with the tip cushion, which we do not stay to describe here, as we shall speak of it more particularly in a future article on gilding processes in general. The process of gilding is as follows:—Place a number of leaves of gold in the cushion. Now flow on the size over the part to be gilt, using it freely, then lay on the gold in as large pieces as convenient; if gilding solid, it is best to use whole leaves, but as it requires much practice to do so with success, half leaves are perhaps most convenient; follow on until the whole of the space is covered. If the size gets dry, or flows off before the whole is covered, it only requires the uncovered parts to be again sized, which is in almost all cases necessary. If we are gilding a line of letters or a breadth of border, the glass should be placed so that these lines shall be perpendicular, because we can gild one line without the size flowing over, or drying on another line, which is in all cases an advantage. A point of great importance is to observe, when the size is placed upon the glass, whether it flows evenly over the glass, or whether it runs into a number of rings, as if spots of grease were on the glass. When the latter is the case, we may be sure that either the glass is not clean or the size is not pure. When the parts to be gilt are once covered, the glass must be put away until dry. The gold must then be polished or rubbed with fine cotton-wool. If this is done gently, but firmly, it presses the gold close to the glass, and hardens it so that it will bear the size to be brushed over it without moving. The cotton-wool for this purpose should be of the very best and cleanest kind, such as the chemists and druggists use and sell. If there be any grit or dust in the wool it will scratch the gold, therefore too much care cannot be used in its selection and use. Another coating or layer of gold must now be laid upon the first coat, and thus it becomes double gilt; very much of this work is done in single gilt, but it has not the solidity of the double gilding. When the second coat of gold is perfectly dry it must be again well polished with the cotton wool. This will cause the gold to have a bright burnish, but if there are any specks or marks in the gold, or, in technical language, it is not as bright as we would desire, this may be remedied by washing the gold well with hot water, as thus:—Pure water should be used as hot as it well can be. Flow it all over the glass freely and repeatedly with the size brush; this will remove the whole of the size and any other matters from between the gold and the glass, and when it is dry the polishing must again be done, which will produce a brilliant burnish on the face of the gold. The back should then be sized again; it will now be ready for writing. We may give a caution here as to the use of the hot water, as there is much danger of breaking the glass, in cold weather especially, and therefore the greatest care is required in its application; the operation should always be done in a warm room, and in winter time it is the safest plan to flow the glass with lukewarm water first, and gradually increase the heat, so that the expansion of the glass may be gradually produced, and thus the danger of breaking be avoided. After many years' experience, we can confidently recommend the above process as being the simplest and best means of obtaining bright burnish gilding on glass.

The material and varnishes used for writing upon the gold are various. Any quick hard-drying varnish will answer the purpose. but for our purpose we have found in practice that Brunswick black, black japan, or cabinet varnish are the best. Of the three we should prefer the Brunswick black, and, in fact, it is generally used for all black and gold work; but when coloured grounds are used this black is not admissible, simply because, although it dries quickly and hard, yet it is always soluble in turpentine, and when a light or coloured ground is put on the glass, the black rubs up and smears, so we see that this very quality which makes Brunswick black invaluable for embossing and for glass-gilding processes to be shortly mentioned also, makes it unsuitable to others. Black japan is not liable to this objection, but is of so brittle a nature that it requires to be quickly worked, or it is liable to chip in scraping (to be described); we therefore prefer to use the cabinet varnish, which is colourless, and dries hard and firm. When writing with this varnish, a little chrome yellow should be rubbed up with it, so that we may see what we are doing; a very little indeed will suffice.

The design or lines of letters are now pounced or traced upon the gold, using either pipe-clay in powder, charcoal, or indian red. The design must be placed face side downwards, and the letters will be written backwards way, so that they will read right through the glass. In many cases it is useful, when there are straight lines of letters, to place a straight-edge upon the top and bottom lines, and take off a line of gold about one-eighth wide; this may be done by using the end of a pencil-stick, or a piece of hard wood. We thus get the tops and bottoms of the letters perfectly straight, and in doing large Egyptian or block letters, we may cut all the horizontal and perpendicular lines, or edges, quite square and sharp in this way. especially if we use the T square. In writing small letters, the writing may be done without these lines top and bottom, but are written full—that is to say, the tops and bottoms of the letters go beyond the lines, and are cut level afterwards with a sharp chisel and straight-edge, and any inequalities or bad edges may be cut straight in the same way. A steel straight-edge is the best, and the chisel should be an ordinary joiner's chisel, about one quarter of an inch in width. The steel is laid straight on the line, and the chisel pushed along, which cuts off the colour and gold perfectly sharp and clear. Long straight lines may thus be made straight and equal in width. When the whole is written and squared up, the superfluous gold may be washed off with damp cotton wool, which takes up and retains it, and, of course, becomes very valuable; for in nine cases out of ten there is more gold to come off the glass than is left on. This arises from the fact that it is scarcely possible to gild to the exact form of the letters. and, in fact, it is not wise to do so, except in very large letters, as it is more economical, and the gold is brighter if we gild lines of letters solid; therefore this auriferous cotton wool is taken great care of, and sold to the gold-beaters, who burn away the cotton, beat out the gold again, and we thus use it again and again. Flat ornament in gold or silver is, of course, done in the same way as we have described for letters. Etching and shading by lines in ornament, and figures in gold on glass are, of course, done in a different manner to the above.

When the gold is laid on, and washed with the hot water, the design is pounced or traced upon the gold, and the lines are cut or scraped out with a stylus of box-wood, or any other hard wood, the outline first, and then the shading, in single lines, with cross hatching. We have used strips of whalebone, of an eighth and a quarter of an inch wide; these are squared at the ends, and then jagged or indented at the end with a penknife; with this, broad shading may be done with good effect. Lines may also be run by cutting a notch of the required width of the line on a square-ended piece of hard wood; the wood at each side of the hollow or notch clears the gold of the glass, and the line is left the exact width of the space or notch between. When the etching and shading is finished the shaded parts may be painted in with vegetable black, mixed with varnish; or if the design is wholly black, with the exception of the gold, Brunswick black may be used. The superfluous gold is now washed off, and those parts required to be coloured are laid in with the necessary tints.

(To be continued.)

HOW SMALL-POX SPREADS.

DR. WHITMORE, in his last monthly medical report for Marylebone, says: "The great importance of properly disinfecting linen, &c., worn by an infected person is strikingly illustrated in the following brief narrative, the truth of which I am able to vouch for:—Some body linen worn by a person who had been suffering from small-pox was sent from a family in London to their laundress at Hendon, with a caution not to mix it with other linen, but wash it separately. This caution the laundress disregarded, and the following are the known results; others there probably are, but as yet I have not been informed of them. The son of the laundress, who had the handling of the linen, took the disease and died, her daughter also, and one of the washerwomen, took it; the latter carried it home to her own family, and other persons living in the same village have taken it. In a family at Stanmore for whom this laundress washed, the servant took the disease and died, a child of the family also took it, but recovered. In a family living in this parish, whose washing also went to this laundress, three female servants took the disease, one of them severely, but all of them—who have been treated in our own hospital—are now convalescent; their master and mistress escaped, and probably for this reason, on the week when the infected linen was washed, their own body linen was not sent. Efforts are being made to punish the offenders in this case, but from the difficulties which surround it, they will not, I fear, be successful."

GOSSIP FROM GLASGOW.

FROM OUR CORRESPONDENT.

WHEN the Spectator was accompanying Sir Roger de Coverley "on the water to Spring Garden," the good old knight "bid him observe how thick the city was set with churches." He might have said the same of Glasgow, and the cry is still "they come." A mission church is about to be built in Petershill-road by the congregation of the "Free" Tron. The style is Gothic, the cost is to be about £4,000, and the accommodation is to be for a thousand worshippers. The United Presbyterian body is about to build a church at the corner of Taylor and Albert-streets, for seven hundred of a congregation, at a cost of nearly £3,000, and also in the Gothic style. The congregation of "Free" S. Enoch's intends building in Dumbarton-road. The site is one that will afford an opportunity for a skilful architect. A church, in the Gothic style, for the United Presbyterians, is in progress in Cumberland-street. Further, this active and influential denomination is having one of its oldest meeting-houses, that in Duke-street, re-fronted. And the Kirk-of-Scotland, unaffrighted by any vision of "disestablishment" that may be looming in the future, is about to build a place of worship in the neighbourhood of the South-side Park.

The foundation-stone of a Town Hall for Hillhead—one of those parasitical little burghs that live upon Glasgow, and withal are independent—was laid on Saturday with much Masonic ceremonial. The architects are Messrs. Clarke and Bell; the cost will be about £9,000; and the style is Greek—the style in which the architects commenced their professional career in Glasgow about twenty-five years ago, when they were the successful competitors for the City and County Offices and the Merchants' House. In the Hillhead new building there will be a public hall, a court-house, a commissioners' room, town-clerk's, fiscal's, collector's, and other offices, a police-office, fire-engine station, &c.

Among the plans that "passed the Dean of Guild Court" last court-day were those by Mr. Honeyman of an intended addition to the Western Club-house. In this addition Mr. Honeyman will likely have some difficulties to overcome. Although the elevation towards Buchanan-street has great dignity, resulting chiefly from breadth of treatment and large masses of dead wall, the elevation towards S. Vincent-street—that to which Mr. Honeyman is about to add—is comparatively commonplace, the façade being short, the voids many, and the solids narrow, and to continue its fenestration would be certainly not to improve it, while to venture in the part added upon a different disposition would be alike to risk a violation of the unities and to divide the building into separate sections. Nor will the difficulty be lessened by the regular, yet peculiar arrangement of the main entablature's consoles. There is a difficulty, but there is also an opportunity—an opportunity of giving a dignity to the S. Vincent-street elevation similar to that enjoyed by the elevation towards Buchanan-street.

Mr. Burnet of Glasgow has been the successful competitor for the new offices of the Clydesdale Banking Company. The building—the principal "event" of the season—will be proceeded with immediately.

Among notable buildings presently in progress are an addition to the County Offices, by Messrs. Clarke and Bell; business premises now nearly completed, for Mr. John Orr Ewing, by Mr. James Thomson; offices for the Scottish Widows' Fund Assurance Company, by Messrs. Peddie and Kinnear, of Edinburgh, and in which may be found a lesson how to draw and how to model Italian ornament; dwellings and shops at Bridgeton Cross, by Mr. James Thomson; stores, &c., for Bailie Morison, by Mr. Bromhead, with their excellent sculpture in wood of S. George and the Dragon, by Messrs. Kay and Reid; and business premises in Union-street, by Alexander Thomson, possessed of his usual originality, but without his usual vigour.

Of the more interesting incidents in our architectural world, I may mention Mr. George Thomson (of Messrs. Alexander and George Thomson, the widely-known architects in Greek), leaving the profession for missionary enterprise in Western Africa. This is not the place in which to detail the nature of this enterprise, suffice it that it is as original as it is disinterested. Mr. Thomson goes out on his own responsibility, at his own charges, and, although an office-bearer in the United Presbyterian Church, wholly independent of any ecclesiastical machinery. Part of his self-imposed work is to found a sanitarium for missionaries and a training college for natives.

PARK-LANE AND HAMILTON-PLACE.*

SIR,—I am anxious, by your leave, to call attention to the present opportunity of improving Park-lane in connection with its continuation through Hamilton-place, now at last in progress.

The traffic down Park-lane going north and south, and passing from Paddington to Victoria Station and Belgravia, is great and increasing. It joins Piccadilly on a level, crossing the great tide which flows east and west, and it would be difficult to find a more dangerous spot than Hyde Park-corner, where the glut of cross streams of traffic attains its *maximum*.

What is wanted is a complete separation of the north and south from the east and west traffic, and the avoidance of a level crossing. This may now be done by continuing Park-lane along the side of Hamilton-place at a low level, passing under Piccadilly, and across a corner of Hyde Park and the garden of Buckingham Palace in a cutting crossed by bridges. The upper outlet would be in Park-lane, near to Stanhope-gate, some 300 yards from Piccadilly; the lower outlet would be in Grosvenor-place, about 400 yards from Hyde Park-corner, nearly opposite to Chester-street. The present roadways in Piccadilly and Constitution-hill would be carried over the low-level road on bridges.

The new descending road would not interfere with Hamilton-place, but would be parallel to it, and separated by a balustrade. It would not affect the improvement now in progress, but would be an addition to it, and would widen Hamilton-place.

The adoption of this plan would separate the cross streams of traffic, and would greatly relieve Hyde Park-corner from the danger which now exists there, and which will be increased by the opening of Hamilton-place.

There would be no practical difficulty in carrying out this suggestion, and as little or no land would be needed the expense could not be large. The bridges might be made ornamental, and the corner of the park and garden is so remote from Buckingham Palace that the privacy of the latter would not be affected. Grosvenor-place is already much lower than Piccadilly, so that the approach from that side presents no difficulty of gradients. The descent on the Park-lane side would not be steeper than Regent-street or St. James's-street.

I should add that the idea of this improvement was first suggested to me by a leading member of the medical staff of St. George's Hospital, than whom none can better estimate the perils of Hyde Park-corner.—I am, &c., Edward M. Barry.

21, Abingdon-street, May 13.

THE WINDOW-BLIND OF THE PERIOD.

WE have had submitted to us by Messrs. Hodkinson and Clarke, of Birmingham, specimens of a new Venetian blind manufactured by them, which well deserves public attention. The blinds are manufactured in thin sheet iron, with the edges and holes folded over to prevent friction on the tapes and cords. The metallic window-blind never wants repainting, can be fixed in half the space required by the ordinary wooden lath blind, has an elegant appearance, and is fire-proof. The colours, which can be varied to suit the fancy of the purchaser, are deposited on the surface of the metal at a temperature of 170 degrees, and an enamel is thus produced having a perfectly hard face, and yet of a sufficiently flexible nature not to chip or blister under the rays of the sun.

COMPETITION.

Leeds.—The committee of the Corporation appointed to examine into the twelve designs sent in for the alteration of the east side of the Central Market, and the improvement of the market itself, have agreed to award the first premium (£75) to No. 11, motto "Practical;" and the second (£40) to No. 4, motto, "Vive et Vivas." Mr. William Swallow, Belgrave-street, Leeds, is the author of the first design; and that which to the committee seemed next in order of merit was the joint production of Mr. T. Dyne Steel, C.E. (from whose designs Leeds new bridge will be built) and Mr. E. A. Lansdowne, architect, Newport, Monmouthshire. Mr. Swallow's design represents an elevation in the Italian style, with a range of shops and four storeys, for the east side of the market. It retains unbroken the Grecian character of the Duncan-street entrance to the market, but shows a re-arrangement of the interior, with a gallery running round. Mr. Swallow gives three alternate estimates in accordance with varying suggestions, and to cost respectively £7,500, £7,000, or £5,000. The leading feature of the design sent in by Messrs. Steel and Lansdowne, as is the case with several others, is the utilising of the present building externally, and this they propose to accomplish by building a new eastern elevation in the same style as the present Duncan-street elevation, the latter to be cleaned down and slightly embellished. They propose to sweep away the whole of the present roof, and substitute one of iron principals and girders, and to have a balcony similar to that at the Corn Exchange, only wider, with shops leading from it. Their estimate of cost of reconstruction is £6,988 14s. 2d. Four of the unsuccessful designs have estimates attached ranging from £4,000 to £5,000. One estimate is as low as £1,985, exclusive of inside alterations and the cost of a dome; and another estimate, without reservation, is as low as £2,126.

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A Giant of the Forest.—The *New York Times* states that a solid section cut from one of the original "big trees" of Calaveros county, California, is in New York, on its way to a European museum. Five men were employed twenty-five days in cutting down this huge tree; its height was 302 feet, and its largest diameter 32 feet. The specimen was cut at a distance of 20 feet from the base. The stump is covered over, and is now used as a ball-room, being so large that thirty-two persons can dance a double cotillion on it, and leave room for the band and spectators. If one has sufficient patience, the age of the tree might be determined by counting the annular rings; but, to save trouble, it has been already ascertained that there are more than 2,500 of them, each representing a year.

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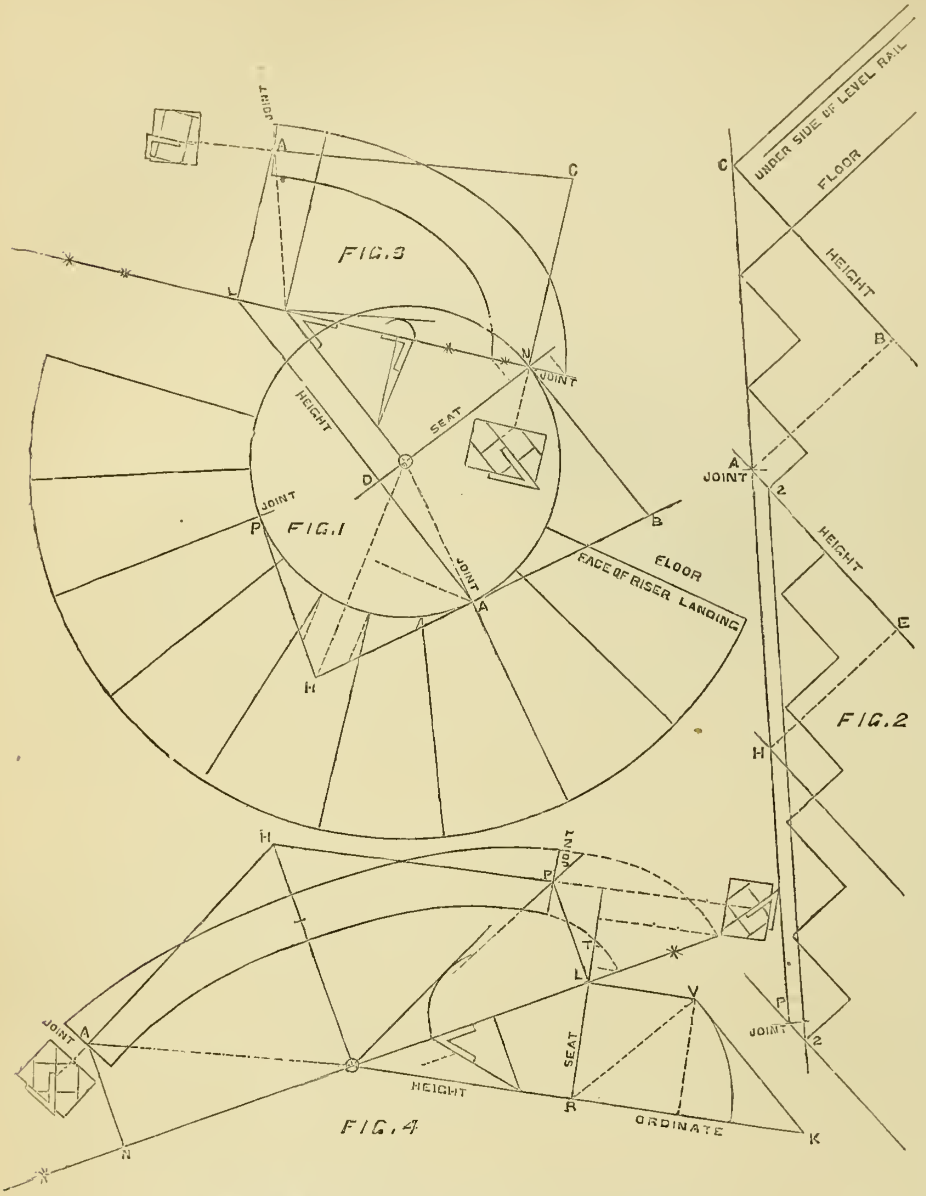
* From the *Times*.



NEW ELEMENTS OF HANDRAILING.—PLATE XXXII.

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 346.)

Plate 32.—Construction of Wreath Landing on Circular Stairs.

Figure 1. The position of this landing shows that the level rail must be continued around the curve. Fix upon the joints, say A and P. This leaves two risers from joint A to the floor. Draw tangents P H and H A extended. The length of A B is unknown until the tangents P, H, A and winder are unfolded. This is shown at—

Fig. 2. Letters P, H, A stand in same position as those on plan. Winders in like manner. The rail on pitch and level have intersected at C.

The perpendicular from C gives A B, which transfer to tangent on left. Draw from B touching circle at N in such manner as to make seat N O square with N B.

Fig. 3 shows construction of mould for wreath landing. The line B N gives ordinate.

Draw from A parallel with it. Let D L, the height equal that of B C on the right. Join N L extended. Square over lines. Then let L A equal D A. Make N C equal N B. Join A C. This line, to be correct, must equal pitch A C on the right.

Complete the mould as usual. Its application is to keep the joint N fair with that of the stuff, and line N C stand opposite that made by bevel shown on square section.

.Fig. 4 is the mould for piece of wreath to stand over five winders, and joins that on the landing. The construction being a repetition of that given in preceding plate. For example: Draw a line in any direction, say that marked "Height and ordinate." Take any point, say R. Square over the seat.

Let R, K, V equal O, H, A on plan. Make V L parallel with ordinate. Let R O, the height, equal that of A E on the right. Join L O extended. Make O N equal O L. Square over the lines. Let L P and N A equal L V. Also make O H equal R K. Join A H and H P. These lines must equal pitches on the right having corresponding letters.

To find the length of elliptic curve: Let R T equal R V. Set off on each side of T half width of rail. Then draw parallel with L V cutting pitch. Find the points to insert pins, and sweep the mould with a string.

Observe at Fig. 2.—The underside of rail rests on risers 2·2, and covers five winders. This being the pitch, it gives the heights, and a proper direction for the construction of moulds.

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PARLIAMENTARY NOTES.

Metropolitan Buildings and Management.—Sir W. Tite obtained leave on Wednesday week to bring in a bill for consolidating, with amendments, the Building Acts relating to the metropolis; for regulating the formation of streets, and of sewers and drains in the metropolis, and for other purposes relating thereto, and the bill was read a first time.

The Hospitals at Stockwell.—Sir M. H. Breach, on Thursday week, asked the President of the Poor-law Board whether his attention had been called to the fact that on several occasions recently the new fever and small-pox hospitals at Stockwell had been without water for several hours at a time; in spite of repeated representations to the authorities of the Southwark and Vauxhall Water Companies, by whom the supply should be provided, and whether any steps could be taken to remedy so serious an evil.—Mr. Stansfeld, in reply, stated that since the hon. baronet had given notice of the question, he had received a communication from the engineer of the waterworks, in which he entered into an explanation as to the alleged deficiency of supply to the hospitals in question. It appeared from that explanation that one of the main pipes had been broken, but that the most prompt steps had be taken to repair it, and there was no doubt now a sufficient supply of water to the hospitals referred to.

Rivers Pollution.—In the House of Commons, on Friday last, Mr. Bruce, in answer to Mr. Kay-Shuttleworth, said he had urged upon the printers all possible dispatch in the preparation of the third report of the Royal Commission on Rivers Pollution, but could not state when it would be delivered to members.

The Wellington Monument.—Earl Cadogan gave notice on Monday that as he had observed that reference had been made in the other House to an arrangement which had been entered into for the completion of the Wellington monument, he would ask on Friday next what the nature of the arrangement was.—The Marquis of Lansdowne said he would lay it on the table.

Metropolitan Tramways.—On the Tramways Provisional Orders being proposed to be read a second time, Mr. S. Booth objected to the bill, as authorising the introduction of tramways, not only over the bridges, but into the very heart of the City.—Mr. Collins thought the subject ought to be left in the hands of the local authorities, especially the Metropolitan Board of Works.—Mr. Fortescue said the greatest pains had been taken in conjunction with the Metropolitan Board of Works to consider these provisional orders before they were laid before the House. If any objections, however, were made to them he would move to have them referred to a select committee.—Mr. B. Hope thought the right hon. gentleman took too limited a view of the matter, and he trusted it would not be left in the hands of those who may or may not petition against it.—Mr. Locke thought it was a great hardship that tramways should not be allowed to cross Westminster-bridge. He could not understand why the members for the City allowed a tramway to cross London-bridge, where the greatest traffic existed, and not allow it to go over Westminster-bridge. He would move that the debate be adjourned.—Mr. Dodson opposed the motion for adjournment. If there were no private petitions against the bill, still sufficient time would be allowed, in accordance with the standing orders, to consider the matter while the bill was in committee.—Mr. Leeman said there were no rules by which private parties could go before a committee, and even if that were so why should they be put to the expense of employing counsel to prevent the nuisance created, and about to be created, by the construction of those tramways?—Mr. Fowler supported the motion for adjournment.—Mr. C. Fortescue consented to the motion for adjournment, and the debate was adjourned accordingly.

London Street Tramways (Kensington, Westminster, and City Lines) Bill.—On the motion for the second reading of this bill, Mr. Charley moved that the bill be read a second time that day six months.—Mr. Sclater-Booth hoped the hon. member would not feel it necessary to divide the House upon his amendment, because from the notice given on this subject by the Chief Commissioner of Works the House would have an opportunity of fully considering the question before the bill had finally passed. He would remind the right hon. gentleman the President of the Board of Trade of the discussion the previous night in respect to the provisional order in connection with this subject, in the hope that the right hon. gentleman would acquiesce in the proposal then made.—Mr. C. Fortescue said, in reference to the suggestion as to proceeding by provisional orders, he was anxious that those orders should be referred to the same committee as that on the tramway bills. With respect to the amendment of the hon. gentleman, he thought that the House would stultify itself if they adopted it, after their declaration of last year. (Hear, hear.) He hoped that the hon. member would take the advice offered to him not to press his amendment.—Mr. C. Forster intimated that the promoters of those bills had acquiesced in the proposal of the First Commissioner of Works.—Mr. Charley then withdrew his amendment, and the bill was read a second time, as was also the Metropolitan Street Tramways (Westminster-bridge and Battersea Park, &c., Extensions) Bill. The following instruction, of which notice was given by Mr. Ayrton, was then agreed to:—"That it be an instruction to the committee on the tramways bills that they do inquire and specially report to the House whether it is expedient to lay down tramways over the approaches to this House, and if so, whether they should be subject to any and what conditions."

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The Government has decided on the erection of a large convict prison in the city of Rochester, to accommodate 1,000 convicts. The new buildings are to be erected entirely by convicts from the neighbouring convict prison at Chatham, where there are at present between 1,600 and 1,700.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

Building Intelligence.

CHURCHES AND CHAPELS.

Bathwick.—Last week the Bishop of the Diocese consecrated the new sanctuary, chancel, and nave which have been added to S. John the Baptist's Church, Bathwick. The original structure was built in 1862. The style of architecture—Early English—is in keeping with that of the old edifice, the architect (Mr. Blomfield, of London) having designed both. With the late additions, the church will accommodate about 900 worshippers—600 in excess of the original number. The reredos is in mosaic work, the subject being "The Adoration of the Magi." The sedilia is relieved with pillars of Devonshire marble ornamented with foliage, and the sacrarium is paved with encaustic tiles. The chancel screen, of Bath stone, with Devonshire marble columns, is adorned with alabaster panels in the façade, and with a cross of the like material, which surrounds the whole. The nave is built of Bath stone, the walls being pricked out in the early irregular style, with the view of rendering it possible to fresco them at any future time. The following were the contractors for the work:—Masonry, Mr. G. C. Mann, Bathwick; carving, Mr. Earp, Kennington-road, Lambeth; tiling, Mr. Packer, Harrington-place, Bath; woodwork, Mr. E. Mercer, Morford-street. The cost of the work just completed is about £4,000.

Bishopsbourne.—The Archbishop of Canterbury's commissary has lost no time in taking in hand the restoration of his church at Bishopsbourne, which was the home of Richard Hooker. Mr. Sandford proposes to undertake a thorough repair and restoration of this ancient and picturesque church, under the advice and superintendence of Mr. Gilbert Scott, who proposes to open to view the timbers of the roofs, to renew the stone work of windows, the greater part of which is in a very shattered condition, and to reseat the nave and aisles. To complete all the works recommended by Mr. Scott will, it is estimated, involve an outlay of £1,900 or £2,000.

Bridgnorth.—On Tuesday week the foundation-stone of the new tower of S. Leonard's Church, Bridgnorth, was laid. The old tower was taken down some time since, upon the recommendation of the architect, who considered the buttress on the north side to be very dangerous. Several ancient stones, of Norman appearance, were found and reported upon, and are preserved to be used in the rebuilding of the new tower. In August last tenders were solicited from well-known building firms, and estimates sent accordingly, when Messrs. Estcourt's (Gloucester) tender was accepted, at £4,100, exclusive of pinnacles, chimes, clock, stained-glass windows, and other incidental expenses.

Burton-Pedwardine.—The church of Burton-Pedwardine, Lincoln, was re-opened on the 2nd inst. The church has nave and well-developed chancel (with an unrestored chapel on the north side), and accommodates about 120 persons. It is in the Geometrical Decorated style, and has been erected under the superintendence of Mr. Charles Kirk, of Sleaford. The Pre-Norman fragments built in the west wall form an interesting feature in the building.

Byfield.—On Wednesday fortnight Byfield parish church, Northampton, was reopened, after thorough restoration. The church consists of a nave, north and south aisles and transept, south porch, and chancel, with a lofty embattled tower, flanked by four multangular embattled turrets, and surmounted by a handsome slender spire. The south porch is very large and handsome. The edifice is principally in the Decorated style of the fourteenth century. The western front is ornamented with three niches, having projecting canopies beautifully wrought. The church has been restored according to the designs of Mr. Albert Hartshorne. The fabric generally has been restored, the inside of the church having been thoroughly renovated. The old oaken high-backed seats have been replaced by modern, substantial open seats of oak, the oak of the old seats being utilised in the construction of the new. The old seats were greatly enriched with a variety of ornamental carving, and this, as far as possible, has been transferred to the new seats, which are placed on a raised floor. Formerly an unsightly gallery in the south aisle, and another at the west end, blocking up a comely tower arch, disfigured the fair proportions of the church. These have been removed. The builder was Mr. Cornish, of North Walsham, Norfolk.

Chittlehampton.—The work of restoring the old parish church at Chittlehampton is progressing favourably. The work has turned out to be a much more arduous undertaking than was as first supposed. Already the north walls, in consequence of their foundation being above the floor-line, and their bearing outwards several inches more than was necessary for the support of the roof, have been completely taken down, their foundation sunk to the proper depth, and the whole is now being built with buttresses, so as to safely counteract the spreading tendency of the roof. The north walls, when complete, are to have five new windows in the Gothic style, so that henceforth all the windows of the church will be in unison and harmony with one another. These works are in addition to the original contract, but it is hoped that the restoration will be completed in November next. Mr. Hayward is the architect.

Church Extension.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its usual monthly meeting on Monday last, at 7, Whitehall, S.W.; the Bishop of Llandaff in the chair. There were also present the Dean of York, Sir Walter C. James, Bart., Archdeacon Harrison; the Revs. Canon Nepean, A. Cazenove, John Evans, H. A. Girand, and S. W. Lloyd; Messrs. George Cowburn, J. F. France, Edmund Pepys, Arthur Powell, Wm. Rivington, and Rev. Geo. Ainslie, M.A., Secretary. Grants of money were made in aid of the following objects:—Rebuilding the church at Aberayron, Cardigan; enlarging or otherwise increasing the accommodation in the churches at Bryngwyn, near Newport, Monmouth; Cockfield, near Sudbury, Suffolk; Holt, near Wrexham; Much Cowarne, near Bromyard; Offham, near Maidstone; and Woodhurst, near St. Ives. Under urgent circumstances the grants formerly made towards building the church of Clerkenwell, St. Peter's, London; rebuilding the churches at Llanfaglan, near Carnarvon, and Shaw, in the parish of Prestwich, Lancashire; and towards reseating and restoring the church at Llanarth, near New Quay, Cardigan, were each increased. Grants were also made from the School Church and Mission House Fund towards building, &c., school or mission churches at Baildon, near Leeds, Bodmin, St. Leonards, Cornwall, and Unstone, in the parish of Dronfield, near Sheffield.

Dalry.—The foundation-stone has been laid of a new Presbyterian Church at Dalry, N.B. The style of the building is Gothic, and in plan it will be cruciform, with square tower and spire at east end. The church inside is 37ft. 6in. breadth, 90ft. in length, with two transepts extending 18ft. back, and 37ft. in breadth. Accommodation is provided for 1,100 people. The cost of the building will be about £5,000. Mr. David Thomson, I.A., of Glasgow, is the architect.

Ellesmere Port.—A new church has been consecrated at Ellesmere Port, Cheshire. The building is from designs by Messrs. Penson & Ritchie, architects, Chester, and the builder is John Roberts, Chester. It is in the Early Decorated style, and consists of nave, chancel, north and south transepts, with organ chamber and vestry respectively adjoining those transepts, and a bell tower to the south. The church is well lighted from without, and is neatly furnished in the interior, the pews being open, and capable of seating about 360 persons.

Leigh.—On Monday afternoon the Bishop of Manchester laid the foundation-stone of a new parish church for the town of Leigh. It is being built upon the site of the old church of S. Mary the Virgin, the tower of which, supposed to date from the reign of Henry VIII., will, however, be retained. From the fact of the figures 1616 being found carved upon one of the beams in the nave roof, it is supposed that the body of the original church was built in or about that date. The new church is to be built in the Early Perpendicular style, and the line of the old walls is to a great extent to be followed. It will have two galleries, one to to the west, the other on the north side, and it is expected to accommodate between 900 and 1,000 people. Messrs. Paley and Austeu, of Lancaster, are the architects, and they estimate that the church will cost fully £8,000. The nave is to be 86ft. long by 23ft. wide; the north aisle will be 13ft., and the south aisle 14ft. 3in. wide. The chancel is to be 38ft. long and 23ft. wide, with aisles on each side. The beautiful roof of the old Tyldesley chapel on the north, with its ancient moulding and tracery, is to be re-used in a corresponding position in the new building. The roof and seats of the church will be of pitch pine, and the church will be lined throughout internally with ashlar stone. Mr. Yates, of Everton, Liverpool, is the contractor.

Lynmouth.—The Free and Open Church or chapel-of-ease at Lynmouth, Devon, the foundation-stone of which was laid nearly two years ago, is now roofed in, and would have been ready for consecration last year but for want of funds. Up to the time of the stoppage of the works in March last, £1,061 18s. 8d. had been received, and £1,022 18s. 8d. expended, leaving a balance to the credit of the Committee of £33. A sum sufficient to complete the contract for the building has been borrowed by the vicar, and the work is now rapidly progressing towards completion. There will be £390 due to the contractors on the completion of the church, their contract being for £1,190. From £200 to £250 will be required for enclosing, fitting-up, gates, and extras connected with the building. Neither communion table, furniture for the holy table, font, pulpit, or fittings, are yet provided.

North Kensington.—The Bishop of London consecrated on Wednesday, in the presence of a large congregation, chiefly ladies, a handsome new brick-built church, with Gothic roof and belfry, to be hereafter surmounted by a spire. The edifice has been dedicated to S. Michael. The interior of the church is primitively simple, devoid of all attempts at ornamentation, without galleries, and sufficiently light and lofty. The seats are altogether open, and will probably accommodate 800 persons. The altar forms a semi-circular recess at the eastern end, with a high gilded dome, and seem through an arch it somewhat resembles the unveiled ark of a Jewish synagogue.

Plymouth.—A new pulpit has just been completed at S. Andrew's Church, Plymouth, from a design by Mr. James Hine, architect, of that town. The erection is in the Perpendicular style, and is of Bath stone and Devonshire marble, standing on a strong and finely-moulded base of grey Cornish granite from Messrs. Freeman & Sons' quarries at Penryn. This stem or base is relieved with great effect by slender columns of red Dartmoor granite at either angle. The plan of the upper part is octagonal, the main portion being of Corsham (Bath) stone of exceedingly close grain, whilst the panels, columns, and angles are a very fine specimen of Devonshire marble from the Ipplepen quarries, near Newton. The marble is red, relieved by well marked veins of cream colour. In the centre panel, facing down the church and standing upon a moulded base, is a figure of S. Andrew in Caen stone, and this forms the most striking feature of the pulpit. The capitals and cornices are profusely carved with delicate Gothic foliage. The pulpit is fitted with a brass book-rest, and is reached by a flight of six steps of Portland stone, to which is to be fitted a brass hand-rail. The interior is lined with wood, with sides of blue cloth. Its height from the floor is 7ft. 10in. The work (which has cost about £130) has been carried out most successfully by Mr. Harry Hems, sculptor, Exeter.

Sheffield.—A new Baptist Chapel was opened last week at Sheffield. The style is Gothic. The internal arrangements are somewhat more ornate than usual in chapels of this sect. The baptistry is situate in the chancel. Messrs. Innocent & Brown, of Sheffield, are the architects.

BUILDINGS.

Forfar.—A new public hall, presented to the town by Mr. Peter Reid, was opened last week. The hall is a very handsome and substantial building in the Flemish-Gothic style of architecture. The building contains accommodation for 1400 people, and has cost between £6,000 and £7,000.

Heavitree.—The foundation-stone of a new boys school for the parish of Heavitree, Exeter, was laid on the 10th inst. In order to meet the requirements of the new Education Act, it was resolved some time ago to turn the girls' school into an infants' school, and the boys' school into a girls' school, and to build a new room for the boys. The cost of the new building is estimated at £1,100. The style adopted is Gothic, the materials used being brick and stone. Accommodation is to be provided for 150 boys. Mr. George Packham is the architect, and Mr. John Gardner, the builder.

Ludgate-hill.—The National and Provincial Plate Glass Company's offices at 65, Ludgate-hill have just been rebuilt by Messrs. Browne and Robinson, from a design by Mr. Smith, architect, of Bloomsbury-square.—A tavern and luncheon-bar has just been erected on part of the vacant land at the corner of Ludgate-circus and Farringdon-street. Mr. Lewis H. Isaacs is the architect, Mr. Elkington, of Kingsland, being the builder. The wrought-iron girders were supplied by Messrs. Phillips, of the Coal Exchange; the polished granite by Mr. Mannelle; and the carving was executed by Messrs. Bell and Almond, of Charlotte-street, Fitzroy-square. The cost was £5,000.

Stockwell.—The foundation-stone of a new sorting-office for the district post-office in Thornton-street, Stockwell, was laid on Tuesday week. Mr. Bragg, of Park-street, Stockwell, is the contractor for the work.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Correspondence.

ARCHITECTS' CHARGES.

Sir,—It is almost too much to expect that you will insert any more letters on this controversy, but it is really a pity that Mr. Morris and "F" cannot discuss it without so much of personal animus. However, I have simply given the results of actual experience under sound advice, and am quite satisfied the views I have stated are not only in accordance with common law, but with common sense and equity into the bargain. Indeed "F.," with all his personality, is compelled to admit as much, though he very adroitly flies away from the question to start fresh ones. I never said that an architect should appeal to what he calls "the glorious uncertainty" over every trifle, or anything like it. But for an architect to be summarily dismissed from the superintendence of works which are being executed from his designs may often be no trifle, and fortunately there is no uncertainty whatever as to what are his rights under those circumstances. Whether it may be graceful or judicious for him to waive a portion of those rights and accept a compromise, if offered, is a totally different question, and depends very much on the spirit in which he may be dealt with. But the most desjrable result to be looked for is that the dismissal should be rescinded, and the architect allowed, as in the two cases I mentioned, to finish his work, and earn his money. Who will say that the architect who in those instances knew and stood on his rights committed "a suicidal action?" It would have been really "suicidal" had he acted otherwise. Much better authorities than the honorary solicitor to the Institute have already pronounced on this question, simply according to architects the same rights which every other employé or contractor possesses. The mention of an architect's name in a contract between an employer and his builder is usually very far from being "incidental," in the ordinary sense of that term. It is commonly a most important and material part of the contract, the architect being by it invested with special and large powers; in fact, as has often been said, acting as a kind of judge in equity between the employer and the builder. The ordinary clause in a building contract as to a change of architects is properly meant to provide against such circumstances as the death, illness, or incapacity of the original architect, and does not confer any right of dismissal on the employer. If the architect were to find it more convenient to himself to resign the conduct of works during their progress, his having allowed his name to appear in the building contract would be taken as a clear admission of retainer on his part, and he, too, would find that he could not leave the employment unless by consent or arrangement.

How Mr. Morris makes out that any Institute rules give the employer such powers as he says, I cannot make out; but does he think they give the architect corresponding powers of throwing up work at any time when it may have become inconvenient or not so profitable to him as expected? I trow not. But the rules are susceptible of no such interpretation. "2½ per cent. on omissions" has nothing to say to work which may be carried out from the designs of an architect after his dismissal. If the client has definitely decided not to proceed with the work, thereby leaving the unfinished portion to come in under the category of "omissions," there would be some force in Mr. Morris's reasoning, but none where the work is neither abandoned nor "omitted," but simply suspended, the employer seeking in the meantime to displace the original architect and employ another.

"F.'s" supposititious case, "if the executors of the original architect had already obtained the full 5 per cent. for carrying out only a portion of the work," is another instance of the fairness of his reasoning, setting up a man of straw that he may show his skill in knocking him down. Who ever heard of such a case? I never said that the executors would be entitled to make such a claim. The main element in an architect's (or any one else's) claim for his full remuneration on being wrongfully dismissed, is that he is "ready and willing" to complete his work, but that the employer will not let him; and what parallel is there between this and a case in which the employment may be terminated by some failure on the architect's side? If by death or illness, then the ordinary, proper, and legal mode of adjustment is for the executors or representatives to arrange with some other architect to complete the work, so that the employé's interests may not suffer. But if an architect wilfully and capriciously threw up a job at a critical time to suit his own convenience, he would find it very difficult (and justly so) to recover anything even for what he had done. And if an employer, with equal caprice, dismisses his architect, the latter has every right, moral and legal, to be compensated, not merely for what he has done, but for the benefits which would have accrued to him through the further employment. The common law of this country, which has been pronounced by great authority to be "the perfection of common sense," is not so wide apart from equity (meaning, by the latter, justice and fair play) as "F." would lead us to imagine. And architects, though they have peculiar rules and notions of their own, are happily protected as well as controlled by it.—I am, &c.,
F. R. I. B. A.

RESTORATION AND PRESERVATION.

Sir,—I read with much pleasure in the Building News of the 5th inst. the paper of Mr. Huggins on the subject of church restoration. It is refreshing to find amongst the money-grubbing professors of our day some one with the feelings of an artist, and who thinks without reference to 5 per cent. The wholesale and scandalous mutilation and destruction of Mediæval work going on of late years is a subject well worthy his eloquence and efforts. I share with him his enthusiastic reverence for our old ecclesiastical buildings, but do not think the fault he attributes to the clergy is so much theirs as it is of the architects. The architect may be a F.R.I.B.A., and member of Ecclesiological and Antiquarian Societies, and in theory approve the principle of conservatism, but claims and duties stand no chance against 5 per cent. Soon as opportunity offers and temptation occurs, scruples vanish, and destruction begins, to be only left off when funds fail. He has always an excuse sufficient (for himself) in destroying old work, and substituting his own crude fancies. The almighty 5 per cent. is the root of the evil. Some persons may, perhaps, think they recognise in my description a portrait. It is, however, not intended for an individual. His name is Legion.

The only way I see by which the evil may be checked would be for parsons to submit their architect's plans to the consideration of local antiquarian societies, and to bind their architect to accept a fixed sum for his services, such sum to be held inclusive, whatever amount may be expended. This would to a great extent baulk the Judas-acting. With regard to the proposition of Mr. Huggins to let the old buildings go to decay rather than touch them, whilst others are erected for use, such idea is purely utopian and impracticable. As a *via media*, I would suggest that simple structural failings should be carefully rectified, and the exposed and decayed stonework be treated with Ransome's, or some other good indurating process. If such application should prove not to be permanent in its effects, and has to be renewed after some years, yet it would be well worth the trouble and expense. Decay and destruction would be arrested, our descendants be able to enjoy the same advantages as we have had, and these precious relics of past piety, munificence, and genius be the delight of centuries to come, possessing still some part at least of their pristine magnificence and beauty.—I am, &c.,
M.

"FRANCIS STUART, ROMA, FECIT, 1779."

Sir,—Such is the signature to a water-colour drawing of a ruined temple of Grecian Doric style, with six columns in front and fourteen on the flank. The peristyle, with the entablature and pediment, are tolerably perfect; but there are no vestiges of walls or roof. James Stuart, who was joint author with Nicholas Revett, of "The Antiquities of Athens," is stated to have been a Londoner, born in 1713, and who died in 1788. He was therefore 66 years old at the date of the drawing, and it may have been the work of a son or other relative. The favour of information upon this point is solicited from the readers of the Building News. That it was the work of an expert architectural artist is certain; for although executed upon thin paper, disfigured by wire marks, and tinted in the thin system of the period, the point of observation is well chosen, the outline correct, and the colour applied with decision and effect. The soft sky, the flat and unobtrusive distance, the hoary tone of the edifice, mellowed by reflected lights, and enriched by deep weather stains, the grassy foreground, and the figures, all evince a perfect unison between the artist's mind and hand. Some labour was necessary to attain a preconceived result—that labour was bestowed—no more.
Who Was He?

TERRA-COTTA AT THE INTERNATIONAL EXHIBITION.

Sir,—I have read with much interest your notice on the terra-cotta exhibited, which upon the whole is very good, but permit me to state that you are in error with regard to our exhibits. Closely following our name you say the aim of the manufacturers is to make the material resemble stone, and that this is a great error on their part: "Not only do they underburn their ware to keep it light in colour, and thus expose it to rapid decay, but they clean and scrape off all the vitrified surfaces after firing, to take away any irregularities which may have presented themselves, and even before going into the kiln the outer skin of the clay, which has formed in drying, is often removed."

Now I think if you will take an opportunity of looking more closely at our exhibits, you will see no traces of scraping; all is well fired, and is so hard that it would be morally impossible to scrape it after it is fired, for if this could be accomplished, as in the case of stone, it certainly would stand a chance of failing from exposure to the weather.

I admit that we do at times aim to resemble stone, as we are sometimes desired, but very differently to the way you describe, as on these occasions we mix the clay with lighter material, adding a greater proportion of vitrifying ingredients, which tends to keep the colour lighter, and at the same time fuses it harder, so that it will bear the exposure to the weather equally as much as the warmer colour; we also granulate it when in a soft state, so that the surface is not touched in the slightest degree when dry, before or after firing. There is a large cantilever truss and a key blockhead done in this way which so closely resemble stone in texture, colour, and truth, as to have been taken for that material. I may add here that the whole of our terra cotta will bear your test, which is a very good one, namely, the point of a penknife.

Trusting you will have the kindness in justice to us, to insert this in your next issue, and that you will excuse me thus trespassing on your valuable space.—I am, &c.,
James Pulham.

Broxbourne, May 16th.

Sir,—In your last number we see you have been pleased to give an approving notice of some specimens of our terra-cotta at the International Exhibition; and among the novelties of that material, to ascribe to us the introduction of the "Hexagon Pots"—for vaulting. We think it right to inform you that they are a device of many years' standing of the Messrs. Hansom, the architects, for whose church in Manchester we have manufactured the voussoirs in quantem; and we beg also to state that they are slightly wedge-shaped, and scored on the outside, so as to key with the mortar.—We are, &c.,
Gibbs & Canning.

Tamworth, May 16.

TRIFORIUM OF WESTMINSTER ABBEY.

Sir,—Will you allow me to correct an error in your article last week "On the Architectural Drawings at the International Exhibition?" The sketch of part of triforium in Westminster Abbey (which you noticed so favourably) is not by me, but by my pupil, Mr. Biuyon, who is now in the East.—I am, &c.,
A. Waterhouse.

8, New Cavendish-street, W., May 16.

THE HANCOCK PROCESS OF ENGRAVING.

Sir,—In your notice of the "Hancock Process of Engraving,' on the 21st ult., you say that the photo-litho' reproductions must be printed on a "peculiar quality paper." Allow us to say that our process does not require a peculiar quality of paper, but may be printed on *any* kind. Of course, like every other process of printing, if "plate" paper be used, the better the impression will be.—We are, &c.,

236, High Holborn, W.C. Whiteman & Bass.

BUILDERS v. ARCHITECTS AND CLIENTS.

Sir,—"Surveyor No. 2," finding his stock of argument exhausted, is reduced to the necessity of saying deliberately that my statement "sounds like a lie." When a man commences to be recklessly discourteous without a cause: to talk mildly of "total abstinence," "wateriness," "aquosity," the "nasal organ;" (why not the pump and the moon?) and, to utter phrases like "T'es a' wunner," &c., in connection with the question of Builders v. Architects and Clients, he makes any serious reply impossible.

It should be borne in mind that he alone is responsible for for the peculiarity of his interpretation of the word "liquefaction."—I am, &c., SURVEYOR.

Intercommunication.

QUESTIONS.

[2224.]—**The Cymagraph.**—Would "W. Larner Sugden, Leek," kindly send his full address, as I should like a drawing of the above instrument?—J. R. W.

[2225.]—**Voluntary Architectural Examination.**—How or where can I obtain the "questions" asked at the last Voluntary Architectural Examination, and those asked by the Civil Service Commissioners at the late examinations for technical clerkships?—J. R. W.

[2226.]—**Schools of Art Examinations.**—I should like to ask some of the readers of the BUILDING NEWS if it is the custom for teachers of the Government Schools of Art to inform their students that any stranger who wishes to go in for the examination can do so by giving their name and address? Nothing said about charge at the time; but, when they go, two shillings a paper is asked of them, as it was of me.—J. H., Sunderland.

[2227.]—**Christmas Cards.**—Can any of your readers inform me where I can obtain copies of some of the "Christmas Cards" designed by Mr. J. Moyr Smith? The whole series are exhibited in this year's International Exhibition. I have copies of some of them, and want to make my series complete.—W. R.

[2228.]—**Sketching Tour.**—Can any fellow-student recommend us to a suitable field for an architectural sketching (pedestrian) excursion? We did South Lincolnshire last summer, and wish to go over ground equally rich in architectural antiquities this time.—S. and S.

[2229.]—**Water-Colour Graining.**—I should feel greatly obliged if any of your able correspondents or numerous readers would inform me of the best medium to use in water-colour graining to prevent it from drying so quick, so as to be able to work a large surface, and varnish the work, say one hour afterwards.—HENRY JOHNSON.

[2230.]—**Pulpit.**—Will any correspondent tell me the different heights a pulpit should have from floor to base of pulpit, and from base of pulpit to top?—EXETER.

WATER SUPPLY AND SANITARY MATTERS.

THE LEAMINGTON IRRIGATION WORKS.—The ceremony of laying the foundation-stone at the Leamington Irrigation Works took place last week. For many years past the town has suffered from defective sewage arrangements, and has been mulcted in heavy law costs by the Court of Chancery for polluting the river Avon. A new order of things is now being inaugurated. Having demonstrated the fallacy of the best systems of deodorisation, the Local Board have turned to irrigation as the only solution of the sewage difficulty. Lord Warwick has consented to receive the sewage of the town upon his estate for a period of thirty years, and to pay the Board upwards of £400 per annum for that which has been heretofore regarded as utterly worthless. The sewage main from the pumping station to the sewage farm has been laid; the engine-house and other buildings are approaching completion, and very shortly the new irrigation works will be in full operation. They are being constructed at a a cost of £14,233 8s. 7d. There are two condensing pumping-engines, each of bright work, and capable of pumping 1,500,000 gallons of sewage in the course of twelve hours. Each engine is registered to be of 180 horse-power. The engine-house is of brick, with stone dressings, of the following dimensions: 72ft. long, 36ft. wide, 45ft. high, with foundations 26ft. in the ground. The engines will be worked by three double-flue boilers, enclosed in a boiler-house 38ft. by 40ft. The chimney, in the base of which was laid the foundation-stone, will be 12ft. square at the bottom, and rise to a height of 90ft.; the interior is in circular form, of about 4ft. diameter all the way up the shaft. The walls of the engine-house are 3ft. in thickness, and will have to support a travelling crane capable of lifting 12 tons. The storage for the sewage will consist of a reservoir large enough to hold 800,000 gallons, in addition to which the present tanks will have accommodation for 200,000 more. There will be subterranean shafts connecting the pumping wells with the tanks and the reservoir. On the premises will be erected cottages for the engine-driver, stoker, &c. The engine-house and other buildings are being erected by Mr. W. Green, of Clarendon-street, whose contract price is £4,750. The sewage main from the pumping-station to the farm is 2¼ miles long; the pipes being twenty inches diameter near the works and eighteen near the farm. The sewage will be pumped to an altitude of 112ft., and will then find its way to eight hydrants for distribution over the farm.

Our Office Table.

HYDE PARK.—The ornamental gates which formerly stood on the south of the Flower-walk, and between that favourite resort and the now-severed continuation of Rotten-row, a little to the north-east of the Albert Memorial, have, according to a local journal, been erected across the drive, over against the Alexandra Gate of the Park. The ironwork has been extended by the addition of two sheets, which have been cast, as were the original gates, by the Coalbrookdale Iron Company. The gates were designed by Mr. Charles Crookes, the late manager of the Coalbrookdale foundry and works, aided by Mr. John Bell, the sculptor.

LONDON FIELDS, HACKNEY.—At the last meeting of the Hackney District Board of Works, Mr. Runtz, the representative of the Board at the Metropolitan Board of Works, reported that there was every probability that the Blackheath Bill would in a few days become law, and the Enclosure Commissioners would then be free to proceed in other matters. He knew that they were anxious with respect to London Fields and the other open spaces in the Hackney district, and it would be through no fault on their part if a measure dealing with those places was not passed through Parliament during the present session.

NEW PARK IN WASHINGTON.—It is proposed to consolidate the Government lands between the Capitol and the White House, and form a fine park two miles long and half a mile wide. There is an intention to provide in the new park a circular drive five miles long, and to have lakes, fountains, walks, and zoological and botanical gardens, and all the appurtenances of a pleasure-ground.

A MISSISSIPPI RIVER ITEM.—The engineer officers who have charge of the surveys and improvements upon the Western rivers report that the Mississippi river is changing its channel, so that Vicksburg will soon become an inland town unless immediate preventive measures are taken. The main channel is now immediately under the bluffs upon which the town stands, making one of the best harbours upon the river, but in a few months the engineers are confident that a cut-off will be formed across a low sandy peninsula opposite Vicksburg, through which the greater portion of the current will pass, leaving not enough water at the levees of the town to float steamboats. To prevent this, it will be necessary to construct an expensive stone revetment, which it is estimated will cost 2,745,535 dollars.

TO IMPROVE GILDING.—Mix a gill of water with two ounces of purified nitre, one ounce of alum, one ounce of common salt; lay this over gilt articles with a brush, and the colour will be much improved.

LANDSLIP AT RIPON.—On Sunday last a landslip or subsidence of the earth took place in a field on the road leading from Ripon to Thirsk. A small hole was observed in the land about eight o'clock in the morning. This gradually increased until a portion of the edge at the side of the road disappeared, and a hole of some twenty feet in circumference was left. On Monday morning the sides had fallen in and the hole at the bottom had disappeared, leaving a crater-like hollow. There are between thirty and forty similarly formed pits, nearly all occurring within an area of rather more than a square mile, and seem never more than half a mile from the river Ure. This naturally leads to the supposition that subterranean streams connected with the river have been the agents by which the strata have been excavated, and causing the subsidences. It is worthy of notice that the pits seldom occur singly, but generally are in groups of two, three, or four. One fell in about June, 1836, and another at Ripon Park in the spring of 1860. One at Sharow, about twenty-three years ago, fell in during the night, and alarmed the inhabitants of a neighbouring house, who found in the morning little more than the breadth of the road between them and the pit. About forty-three years ago, some men were making a stack near the old hall at Bishop Monkton (four miles from Ripon), and had left it for a while. When they returned the ground had given way beneath the stack, and it had disappeared. The men hastened to their master, exclaming "It's gone; it's gone." The hole still remains a receptacle for rubbish.

A NEW COLLEGE FOR WOMEN.—A meeting, largely attended, has been held at St. James's Hall this week to support the movement for founding a women's college, the one at Hitchin being found insufficient for the need of the public. The chair was occupied by the Hon. Cowper-Temple, M.P. Among those upon the platform were the Bishop of Peterborough, Lord Lyttelton, Sir Wilfrid Lawson, Canon Miller, Dr. Barry, and Mrs. Garrett-Anderson. Mrs. Garrett-Anderson addressed the meeting, maintaining that increased culture was necessary for women; that their emotional natures required, in order to make them more rational, a keener mental training; and that when they had received that, they would not break down as they so frequently did. She called upon some woman with money to build herself an everlasting name by endowing a college. Bishop Magee also urged that, for domestic reasons, the relation of the wife to her husband and the mother to her son required a higher female culture. No resolutions were passed.

BREAKING OF RAILWAY AXLES.—Mr. W. Bridges Adams says that the cause of the breakage of railway axles is to be found in the fact that they are strained beyond their powers, not by the load, but by imperfect structure of the vehicle they are attached to—imperfect, possibly, originally, but commonly by violence in use. "The running is wringing the neck of the axle." With a view to lessen lateral friction of the wheel flanges as much as possible, it has been customary to keep the axles as near as possible together. This, if the bodies be long, involves "hogging" and oscillation, with a bad distribution of the load. Other things being equal, the nearer the axles are to the waggon end, the steadier they will be; but then flange friction increases with the length of wheel base, and a remedy must be provided for this. Supposing that a train of waggons were built perfectly true at the outset, for a straight line, the multitude of longitudinal shocks would soon set the wheels out of truth, and so the question arises whether it be possible so to construct them that diagonal shocks to the frame, giving a permanent set, shall not affect the true running of the wheels; and next, whether wagons may not be so constructed as to dispense with the loose coupling, which is a material source of breakage to couplings and displacement of the waggon frames? We think it is. Desirable as it is to point out the causes of the defects, it is still more useful to point out the remedy.

NOVEL SOURCE OF WATER SUPPLY.—There is, says a Canadian journal, on the farm of Mr. Secord Smith, Fifteen Mile Creek, one of the greatest curiosities in this part of Canada—viz., a spring of the clearest and best water gushing out of the centre of a pine tree Some three years ago, Mr. Smith tapped the tree for the purpose of getting resin, and was surprised on seeing a stream of clear cool water, about ½ an inch thick, which has continued to flow ever since. The phenomenon cannot be explained by those about here.

THE CHELSEA EMBANKMENT.—It is to be hoped that there will be no further delay in the commencement and execution of this important work by reason of contractors' misunderstandings or mistakes. Among the tenders sent in for the work in answer to the second advertisement for them, the Metropolitan Board of Works have accepted that submitted by Mr. William Webster, the amount of which is £133,950.

INSTITUTION OF SURVEYORS.—At the ordinary general meeting, held on Monday, May 8th, the following name was read and passed for ballot—viz.:—As Associate—William Edward Woolley, Loughborough, Leicestershire. The following donation to the library by the Committee was announced, "Report of the Committee of the British Association on the Treatment and Utilisation of Sewage." A vote of thanks was unanimously passed to the donors. The adjourned discussion on the Rating and Local Government and Local Taxation Bills before Parliament, was resumed and concluded. The next meeting will be held on Monday Evening, May 22nd, when a paper will be read by Mr. E. I'Anson, entitled, "London; its Commercial Centres, and their Influence on the Value of Land." The chair will be taken at eight o'clock.

LONDON CHURCHES AND CHURCHYARDS.—We are glad, with the *Guardian*, to see that the burial-ground in Drury-lane, which has long been in a neglected and disgraceful condition, is at last put in order, planted, and laid out neatly with walks. It was formerly the cemetery of S. Martin's-in-the-Fields, and for many years the crowding of bodies and the carelessness of the authorities made it a nuisance of the worst description. It was closed some twenty years back, and has since lain uncared for. It is certainly pleasant to find S. Botolph's, Bishopsgate, S. Sepulchre's, S. Anne's, Soho, and many other churches improving the appearance of their churchyards; and we hope the movement may spread, as in the present instance, to the detached burial-grounds as well. We would suggest, in addition, that when a number of remarkable persons are interred in the ground, a tablet or board should be set up inscribed with their names, as the Dissenters have done for Bunhill-fields. Some eminent characters rest in Drury-lane; at S. Anne's, Soho, King

Theodore of Corsica, and many greater than he; in S. Martin's churchyard, and now paved over, Robert Boyle; at S. Bride's, Fleet-street, Wynkyn de Worde; in S. Margaret's, Westminster, Sir Walter Raleigh; and so on—hardly any old London church is without its list of celebrities, yet, as a rule, how few are commemorated by even a headstone. The Society of Arts put up a few blue tablets, but they seem to have long abandoned their good work in this particular. We want an "Old Mortality" in London.

The Art Classes at the Working Men's College in Great Ormond-street have been increased by the accommodation offered by the new rooms. Two new classes are now in course of formation—in the study of life from the nude model, under the direction of Mr. W. Cave Thomas; and in the study of still life, under the direction of Mr. H. W. Brewer. The other art classes comprise elementary pencil and chalk, water-colour ornament, and perspective and antique.

The Sale of Postage-Stamps.—The Postmaster-General has made public his intention to prohibit the purchase of postage-stamps by local postmasters after the 31st of next month. We notice that more than one contemporary appears inclined to let the head of what is fast becoming the most annoying and unbusinesslike department of the Government have his own way, and are publishing notices to their customers, refusing after that date to receive stamps in payment for cheap advertisements, single copies, and the like. We do not intend to do anything of the kind. The Postmaster-General has to come round to our way of thinking, and to rescind his order in the course of the next six weeks. Parliament will still be sitting in July, so there is little fear of the perpetration of any fool's trick similar to that which Lord Hartington played last year with the parcel post.

University College, London.—At a session of Council on Saturday last, Mr. E. J. Poynter, A.R.A., was appointed Slade Professor of Fine Art in the college. The buildings forming part of the north wing, which have been designed for the fine art school, are nearly completed, and it is intended to open the classes for drawing, painting, and sculpture at the beginning of the college session in October next. The late Mr. Felix Slade has established at the college six scholarships for proficiency in those branches of art, each of the value of £50 per annum, tenable for three years, and which may be held by ladies.

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MEETINGS FOR THE ENSUING WEEK.

Monday. *Conference of Architects* at the Royal Institute of British Architects' Rooms, 9, Conduit-street, W. Opening Address by Mr. T. H. Wyatt, P.R.I.B.A. 2 p.m.

Royal Institute of British Architects. "On the Decoration of S. Paul's Cathedral." By Mr. F. C. Peurose, Fellow. 8 p.m.

Institution of Surveyors. "London: Its Commercial Centres, and their Influence on the Value of Land." By Mr. E. I'Anson, F.R.I.B.A. 8 p.m.

Tuesday. *Architectural Conference* (Second Day). Sectional Meeting: "Professional Practice and Education." 2 p.m. Sectional Meeting: "Archæology and Art." 8 p.m.

Institution of Civil Engineers. Renewed Discussion upon Mr. A. Jacob's Paper "On the Treatment of Town Sewage." 8 p.m.

Wednesday. *Society of Arts.* 8 p.m.

Thursday. *Architectural Conference* (Third Day). Sectional Meeting: "Construction and Science." 2 p.m. Dinner at Freemasons' Tavern. 6.30 p.m.

Society for the Encouragement of the Fine Arts. Dramatic and Lyrical Readings. 8 p.m.

Friday. *Civil and Mechanical Engineers' Society.* "On the Use and Selection of Stone for Engineering and Architectural Work." By Mr. A. C. Pain, 7.30 p.m.

Saturday. *Associated Arts' Institute.* "Chaucer Considered as an Artist." By Mr. B. Montgomerie Rauking; and Annual General Meeting. 8 p.m.

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Chips.

The "Palais Royal," Argyle-street, Regent-street, is proposed to be turned into a circus and hippodrome.

It is announced by the Commercial Gas Company that, after Midsummer next, the price of gas to new customers will be reduced from 4s. to 3s. 9d. per thousand cubic feet.

The Limmer Asphalte Company have contracted with the Board of Works for S. Saviour's District, Southwark, to asphalte one thousand superficial yards of road, from the south side of S. Thomas's-street to the north side of King-street.

The President of the Institution of Civil Engineers will hold a *conversazione* at the rooms in Great George-street on the 6th of June next.

Contracts have been let for New National Schools, Worsthorne, near Burnley. The cost will be about £1,600. The building has been designed by Mr. Waddington, of Burnley, and is of Early English character.

Application has been made to the Poor-Law Board by the Poplar Guardians for permission to borrow £10,000, to complete the new workhouse, upon which no less than £40,000 has already been expended.

The new Police-court for the Worship-street district is nearly completed, and will be opened next month.

The Hackney District Board of Works has decided to provide fences along the paths on Hackney-downs and London-fields, at a cost of £328.

The church of S. Mary-le-Strand is to be re-opened on Sunday next, after restoration.

Mr. Sant's picture at the Royal Academy represents the children of Mr. Edward Baring, and not those of Mr. Edward Barry, R.A., as stated in the Exhibition catalogue.

Mr. H. L. Grantham, of Hounslow, architect, has recently adapted large premises in Hatfield-street, near Blackfriars-bridge, for clarifying fat.

The tower of Trinity Church, Cwmbran, Monmouthshire, was struck by lightning on Monday week.

On Saturday week the S. Helen's Town Hall was destroyed by fire. The damage is estimated at £2,500.

Workmen are now engaged in removing to other positions some of the large monuments in S. Paul's Cathedral, preparatory to the proposed work of completion. A lobby is to be formed inside the north door similar to the one on the south side.

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Timber Trade Review.

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Prices, May 16.—Per S. Petersburg standard:—Quebec pine, 12ft. 3 × 11in., first floated, £17; first dry floated, £18; second bright, £13 15s., third bright, £8 15s. to £9; third floated, £9; third dry floated, £9 5s. to £9 10s.; Quebec second red pine, £9 15s.; Wyburg first mill-sawn yellow, £9 10s. to £9 15s.; Ulcaborg first mill-sawn yellow, £7 5s. to £8 5s.; Swartwick mixed yellow, £9 15s. to £10 15s.; Sandarne mixed yellow, £9 15s.; Petersburg first white, £8 15s. to £9 10s.; ditto first yellow, £11 10s. to £13; ditto Gromoff's shipment, £13 5s.; ditto second yellow, £7 15s. to £9; Nystadt mill-sawn yellow, £6 5s. to £6 15s.; Kramsfors yellow, £7 5s.; Jacobstadt first mill-sawn yellow, £7 10s.; Husum third yellow, £7 15s.; Gothenburg mixed white, £7 10s. to £9; ditto third white, £7 10s.; ditto fourth white, £7 to £7 5s.; Gefle mixed yellow, £9; ditto third yellow, £7 10s. to £8; ditto common yellow, Fredrickshald second yellow, £6 15s.; Christiana second yellow, £6 10s.; ditto third yellow, £6.

Per 120:—12ft. 3 × 9in. Christiana first white, £20; ditto second white, £18; ditto third yellow, £12 10s.; Dram mixed 2nd, 3rd, and 4th white £10; Fredrickshald mixed yellow, £15; Sannesund first white, £18; ditto common white, £12 15s.; Schien mixed yellow, £12 5s. to £12 10s.; Quebec first spruce, £15 15s. to £16 10s.; S. John's unsorted spruce, £11 15s. to £13; Trois Pistoles first spruce, £14 15s. to £16 15s.; ditto second spruce, £12 to £14.

Per 120 12ft. 2½ × 6½in:—Dram second yellow, £6 10s.; ditto third yellow, £5 to £5 15s.; ditto third white, £5 to £5 15s.; ditto common white, £5 5s.; Kragero second yellow, £7; ditto third yellow, £6 5s. to £6 10s.; Sannesund common yellow, £5 to £5 5s.

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Trade News.

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WAGES MOVEMENT.

The Engineers' and Joiners' Strikes at Newcastle.—A general delegate meeting of the engineering trade of the Tyne district, representing many thousands of workmen, was held at Newcastle on Saturday night, to consider the refusal of masters to accede to the nine hours' movement. The meeting expressed its aversion to turning out, and appointed deputations to wait on the employers to try to come to a peaceful settlement. The joiners of Newcastle and Gateshead are still on strike for nine working hours per day.

Aberdeen.—Owing to the general healthy state of the building trades in Aberdeen, the master builders have voluntarily advanced the wages of the masons employed ¼d. per hour, or nearly five per cent. of their wages.

Kidderminster.—At Kidderminster the carpenters and joiners are out on strike for an advance of 1s. 3d. a week in their wages. It is said that the men gave four months' notice of their intention to ask for this advance, and offered to leave the matter to arbitration, but that the masters declined the proposition. The men therefore say that they have been driven to strike.

TENDERS.

Anglesey.—For the erection of new parish schools at Llaufair, P.G. Mr. R. G. Thomas, architect:—

Thomas	£423
Griffith	386
Williams	352

Bristol.—For the erection of Baptist chapel, Cotham, Bristol. Mr. H. F. Price, architect, Weston-super-Mare:—

Hall	£4798
Beaven & Son	3959
Marquiss & Munro	£3639
Wilkins & Sons	3604
Davis & Son	3585
Eastabrook & Sons	3577
Gorvett (accepted)	3195

(Somerville's tender withdrawn.)

Hammersmith.—For building new wings and making alterations and additions to the infirmary of the Fulham Union Workhouse, for the guardians of the Fulham Union. Mr. John G. Hall, architect:—

Foxley	£4650
Pitcher	4364
Nightingale	4039
Sawyer	3993
Luscomb	3638
W. Mansell	3550
Fanthorpe	3500
Chamberlin, Bros.	3499
Aviss & Co.	3494
Lacey & Tolkington	3450
Rose	2694

Hertford.—For repairs, &c., to All Saints' Church, for the churchwardens. Messrs. W. Wilds & Son, architects and surveyors:—

Parkins	£265	0	0
Cattle	192	10	0
Norris (accepted)	158	0	0

(Schedule of prices for other works.)

Highgate.—For new church in the Archway-road, Highgate. Mr. E. Hoole, architect:—

Dove	£7270
Henshaw	7120
Hobson	6425
Macfarlane	6425
Nutt	6240
Wright	6156
Killby (accepted)	5963
Niblett (withdrawn)	5285

Leicester.—For additional buildings to new mills, Soar-lane, Leicester, for William Evans, Esq. Mr. Thos. Barnard, Bank-buildings, Leicester, architect. Quantities supplied:—

Osborne	£730	0	0
T. & H. Herbert	680	0	0
J. J. Fast	660	0	0
Wm. Cox	559	10	0
H. Eagle	545	10	0
T. Duxbury	637	0	0
T. Bland (accepted)	589	0	0

Menai Bridge.—For the erection of new entrance lodge and gateway at Treborth Park, Menai Bridge, for Rd. Davies, Esq., M.P. Mr. R. G. Thomas, architect:—

	Lodge.		Gateway.
Rogers & Son	£1262	...	£370
Jones	934	...	259
Roberts & Co.	942	...	213
Williams	875	...	284
Thomas*	720	...	214
Jones	720	...	250
Griffiths	680	...	180

Iron-work of gates and railing:—

Bennett (accepted)	£114

* Accepted subject to deductions.

Menai Bridge.—For the erection of a new house for Roger Evans, Esq. Mr. R. G. Thomas, architect:—

R. Parry (accepted)	£1180

Menai Bridge.—For the restoration of the old parish church. Mr. R. G. Thomas, architect:—

Griffiths	£92	0	0
Thomas (accepted)	87	12	0

Newington.—For additions to Newington Workhouse, Surrey, for the guardians of S. Saviour's Union. Messrs. Henry Jarvis & Son, architects:—

Marsland & Sons	£9995
Pearce	9599
Harrison & Son	9417
Chappell	9310
Nightingale	9237
Wyatt	9180
Kirk	9173
Dover, Dowel & Co.	9149
Shepherd	9100
Tarrant	9022
Kent	8977
Downs	8972
Wigmore	8950
Gooding	8900
Cooper	8880
Perry & Co.	8855
Thompson	8873
Capps & Ritso	8797
Yates	8750
Crabb & Vaughan	8727
Henshaw	8524
Watson, Bros.	8470
Blackmore & Morley	8452
Wood	8400
George	8267
Cooke & Green	8255
Kipps	7994
Machin	7834
Croker	7714

Prestwood.—For a pair of gamekeepers' cottages at Prestwood, near Crawley, for J. Trist, Esq., Messrs. Mickle & Wilson, architects. Quantities by Messrs. Paiu & Clark:—

Ockenden	£570
Gates	523
Wilkins	510
Wickens	403

Sussex.—For the erection of New Coombe Farmhouse. Mr. Edward J. Tarver, architect. Quantities by Mr. Riddett:—

Shearburne (accepted)	£1230

Swansea.—For the erection of a new Masonic lodge Mr. Thos. Davies, architect:—

Davis & Morgan	£1175
Watkins & Jenkins	1170
Morgan	1100
Joues	995
Rees	955
White (accepted)	780

THE BUILDING NEWS.

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LONDON, FRIDAY, MAY 26, 1871.

THE INFLUENCE OF ARCHITECTURE ON FIGURE-DESIGN.

THAT every architect should be able to draw the human figure is a text which for years past has been expounded and enforced with great ability. We could wish that its preaching had produced larger results; though the results we anticipate are not precisely those which in some quarters have been expected from it. There is little probability that any one engrossed with the cares and responsibilities of even a moderate-sized practice will, in the productions of his leisure moments, rival Mr. Leighton or Mr. Moore. In the matter of drawing, he may, perhaps, by diligence, attain the level of an average Academy student; but the cartoons of an architect who cultivates painting are never likely to equal those of a painter by profession. Still, in one respect, the architect has an advantage—he knows, or may come to know, what sort of painting will agree with his architecture, and what sort will clash with or be ruined by it; and the development of his taste on this point is, we think, the principal benefit which he is likely to gain by figure-drawing. Though it will not enable him personally to do great things in sculpture, in fresco, or in mosaic, it will teach him to appreciate them when they are produced by others; and more than this, to know which of his contemporary artists gives most promise of being able to produce them. The architect, in fact, on this scheme, will decide where the sculpture, or painting, in his works is to be placed, and what the style, character, and general arrangement of it should be. It will be for him to fix the conditions which other artists must fulfil—to settle definitely the form of their work down to a certain limit, and, within that limit, to leave them the fullest liberty for the use of their own individual talent.

The vocation of the architect, then, here, as in many other places, appears to be that of presiding over, harmonising, and connecting the work of others. It is his business to design the architecture, but only to superintend the designers in subsidiary arts. In the present disorganised state of affairs, he may, it is true, have to do much that does not properly fall to his share. If he cannot find a carver with invention enough to adorn his buildings worthily, he must help him out by hints and sketches of his own. If he cannot get his stained glass suitably designed by others, he must, if he can, design it himself; and so with other things of the kind. Out of his own mind, if he cannot get it out of the minds of those who should be his assistants and coadjutors, he must put something of life and freshness and originality into what he undertakes. But at best, the building which contains only one man's ideas, however able he may be, will be tame and uninteresting beside those which hold the best thoughts of many. The Mediæval system, after all, is the successful one; the system where every workman had a sphere of his own, and would exert to the utmost whatever faculty was in him. He had to exert it, indeed, in a particular direction. He had to make his little bit of detail harmonise with the grand expression of the whole. He had, as one voice in a chorus, to keep his part in tune, not to strike into a different key, as decorative artists now-a-days are too apt to do. And this question of keeping in time seems worth noticing in relation to several points which concern art-progress. There was a discussion in the BUILDING NEWS many years since on the question whether Gothic architecture is in harmony with the highest class of painting and sculpture. It seemed to be taken for granted at that time that the highest class must be Greek; and that if any style of architecture did not harmonise with Greek sculpture, it was thereupon to be condemned as inferior. These postulates granted, it was easy to prove that not only Gothic, but every other style which the world has ever known, one only excepted, was unworthy of notice. Greek sculpture was the best; it only harmonised with the Greek style, therefore the Greek style was the only one deserving attention. Such seemed to be the chain of reasoning adopted—at least, on the Classic side—and though we altogether differ from the conclusion, we are ready to admit the truth of many of the statements brought forward. It is true that sculpture in one style may be totally discordant with architecture in another style; and it is true again that some styles require a much more conventional type of sculpture than others. Of late years it has been a popular idea to make Gothic figure design more naturalistic; to correct it, and round it, and smooth it down. We are constantly hearing of the need, for example, of improving modern stained glass in this particular; of replacing the stiff, quaint, archaic forms of ancient examples by something natural and graceful. Now, without doubt, the distorted limbs and disproportioned features of some Mediæval works were due to ignorance. Their designers made them what they are for want of knowing better. Had they been acquainted with anatomy, much of what strikes us as singular in their work would have been avoided. But that they would at once have striven after the types of beauty which enchanted the Greeks is a supposition for which no probability whatever can be shown. The Mediæval sculptors, it is true, were for the most part imperfectly trained in the representation of the human form. But had their training been quite perfect, they would not have represented it of the graceful, unimpassioned type which pleased Classic tastes. They aimed at something entirely different, and whether perfect or imperfect in power of delineation, their instinctive feeling of harmony led them rightly so to aim. Mere beauty of form was not what they wanted; they sought for striking character and intense expression. In the later Gothic, this expression often passed all bounds, and became completely exaggerated; *as* sculpture, the sculpture was injured or ruined by this exaggeration, but as an adjunct to the architecture, it was harmonious and defensible. Whatever people may say about the necessity for good drawing and for close study of nature, it remains true that figures everywhere ought to have the same characteristics as the architecture they belong to. If buttresses and piers, if tracery and mouldings have become wiry and attenuated, the sculpture which is connected with them must become wiry and attenuated too. While a building style is calm and quiet and severe, the accessory arts may be the same. But as their groundwork changes, so must they. As architecture rises into a sharper and still sharper key, sculpture and painting, to agree with it, must rise with equal pace. A taste depraved by the high seasoning of the later Gothic would feel really fine sculpture to be tame and insipid. It is vain to think of importing a naturalistic mode of figure design into such a style. The first step must be to select one with which good sculpture will agree; one not so showy as to eclipse all work but the most meretricious, nor so exaggerated as to overpower all expression except that which oversteps the modesty of nature; one which, though Greek forms are forbidden to it by our climate and modes of construction, may yet have something of that purity and severity which characterise the Greek spirit. Such a style is that of the earliest Gothic; the first untainted period of Pointed art, before tracery was thought of, or its very rudiments introduced, when Northern Europe possessed, for some half century, an architecture which Phidias himself might have been proud to adorn.

FOREIGN PICTURES AT THE INTERNATIONAL EXHIBITION.

THERE can be no question as to the International character of the picture galleries adjoining the Royal Albert Hall, that cushioned Colisseum, lined with crimson. Great Britain, France, Austria, Prussia, Bavaria, Belgium, Portugal, Holland, Hungary, Norway, the minor German territories, Sweden, Denmark, and Italy are represented; some in great profusion, as England, Belgium, Bavaria, and France. Since the first group is likely to remain with us, and is tolerably familiar to the public who care for pictures, we turn at once to the less known schools of foreign art, and regret that there is no specimen of the surprising genius which has sprung up in Russia; not of a frigid, frozen, or gloomy type, but radiant, warm, and poetical to the last degree. The visitor who picks his way through the galleries, mistrustful of the catalogue—which is the worst we ever saw, and might tempt us to pencil down a luxurious Sappho as a member of the College of Cardinals, or Narcissus among his lilies as the Lord Mayor of York: this is absolutely no exaggeration—will find rich depths of interest in the Continental canvasses, and should not lose the opportunity, as they are not with us for long. There is amazing force and spirit, for instance, in the Belgian collection, which since the appearance of Henri Leys—whose name, unaccountably, is absent, has revived the old Flemish tone and colour, without the slightest servility of imitation. True to tradition, it discards Classical subjects, rarely attempts the human figure pure and simple, and generally keeps at home. The one nude form is that of Lady Godiva, which is exquisite, though the countenance may be regarded as too youthful. Otherwise, your Belgian artist mostly loves the quiet corners of his own country; glimpses of the Scheldt and Meuse, sketches of village festivals, snug interiors with fire and light, groups afield, perspectives of shore and tide, and bits of shipping; though he can also be very effective with "A White Slave," wicked enough with "Kisses," and vigorous over "The Torments of Tantalus." The Bavarians display a more varied choice, though they too are much addicted to that which we may term patriotic landscape, naturally, because, where else can be seen a brighter or bolder region, or more sumptuous valleys, sparkling with more crystal waters? The contrast between Bavaria and Belgium in this respect will immediately strike the eye,—the one so low, pastoral, rural, inland, and so dim and monotonous along the sea; the other so bold, many-outlined, and romantic, but both picturesque with antique towns. Like the former, the latter, however, do not aspire to the highest of all studies, the ultimate object of art, the human figure, or, in other words, beauty. They have not a single specimen—beyond an inferior one, "Before the Toilet"—of that order here, which is probably fortunate, considering our reminiscences of Munich, where the delineations of goddesses and bathers were generally of a ghastly blue, and that in the city which has the audacity to call itself "The Capital of European Art." There is a great deal of mountain and woodland in this school; a great deal of rusticity and pastoralising; a good many girls in fanciful costumes; with any number of churches, castles, and ceremonies. You may know that all this is Bavarian without being told so. A tender trifle called "A Bird's Funeral" deserves, however, to be specially pointed out. It will be observed that up to this point we make no mention of scriptural subjects; but here are two, "Christ and the Sick Man at the Pool of Bethesda," and "Return from the Entombment of our Saviour." We must be satisfied with the predilections of those South-Germans for the scenes of their own every-day life, their forest glades and woodmen's huts, and the episodes of their old religious history. Holland is homely, as usual. The Norwegians revel in heroic events, liable to be suspected as fabulous; in wild gorges and sea-inlets and waterfalls, in snow fields and glaciers, and cottage glimpses. With respect to Portugal, it is a singular circumstance that, with a solitary exception, not only are all the works of Portuguese artists exhibited portraits, but portraits of English persons. They may easily be passed by, and we enter among the German shadows—very characteristic — Thuringian forests, the hovels of charcoal burners, deep dark mountain lakes, vast drifts of rock, and the entrances of Salvator Rosa caves, and wolves devouring their victims. It is curious to remark how these national characteristics betray themselves, almost invariably. Thus, it might have been prophesied that we should not pass the Spanish screen without seeing "A Wounded Picador," or the Swedish without fogs at sea, quaint country churches with congregations equally quaint, misty pools lying among dreary slopes, and the streets of Stockholm. Norway is similarly Norwegian, and Denmark Danish. But a separate interest attaches to the Hungarian collection, as exhibiting a type of art very little known in England. Its nature may be illustrated by the titles which one artist affixes to his pictures:—"Walloons," "Blue Hose," "Elephant House," "Swine-herd," "Gypsies," "S. John," "His Reverence's Walk," "Jewish Butcher," "Czar Paul Reading Mass," "Sketches for Potemkin's Eldorado," "Pigs," and "Pig-Killing." Hungarian art resembles Hungarian literature in a wonderful degree; it is the same compound of pathos, humour, and simplicity, with much pictorial power, and slight attempt at tragedy. We have a delicate "Cupid and Pysche," a well-told touch of sadness in "Exiled," a "Dante and Beatrice," from the approved models; a Moor, a Greek, and a Shakespearian tableau. It is into Italy, beyond a doubt, that we are entering, for the walls are vivid of the South, and enchanters appear to have been at work—adoring the loveliness of their own land, and revivifying that of antiquity; there is whiteness, brightness, blueness, sunshine, on all that painted horizon; Medora in perfect grace; a Sappho recalling the ideals of two thousand years ago; a Grecian idyl, daintiest of the dainty; "La Bella Giardiniera"—always an Italian favourite; a sweet image of a "Girl Caressing Young Pigeons;" a Nourmahal, splendid as her jewels, and, of course, certain monks, and, also of course, azure skies, lakes, hillsides, views of Etna, brown women of Albano, and a kaleidoscopic Venetian masquerade. The graceful costume of the Italian fishermen and peasants—girls more particularly—the peculiar colours of rocks and verdure, the glow of the transparent atmosphere, and the gaiety of the national mind—more observable in the men than the women—give a distinct character to Italian, which may be imitated, and no more. The one point in which Turner failed was, in that he appreciated all this, he was compelled to exaggerate in order to express his Southern sympathies, so that his landscapes, instead of simply appearing to burn, are actually on fire. From Alma Tadema's striking "La Causerie" we wander through a perfect maze of *genre* works interspersed with others in the more ambitious French style; Corst's "Orpheus," Delacroix's "Convulsionnaires," "Christ on the Lake of Genesareth" and "Death of Gatz de Berlinchingen," the famous "Marie Antoinette" of Delaroche, far surpassing its rival in another gallery; Ary Scheffer's equally celebrated "Marguerite;" and Regnault's ghastly "Execution in a Moor's Palace," which is in the worst possible taste, and repulsively realistic. None, of course, will pass without pausing to be charmed, the sweet specimens by Greuze, "Expectation," and "The Vestal," or Meissonier's "Painter," in which every touch is simultaneously firm and delicate. Greuze has, moreover, three other fascinating studies, "A Girl with a Rose," a "Charlotte Corday," and "A Child," the perfection of his florid style. As might be expected, there are bathing pieces, Venus and Adonises, Venus and Cupids, toilette scenes in which the toilette has not begun, ideal figures, Circassian damsels ready for inspection in the market, Ledas, Judgments of Paris, "Venus Demanding Arms of Vulcan," and sporting or sleeping nymphs in abundance; for the French regard themselves as being the greatest, if not the only masters in Europe in the art of flesh painting, the anatomy of beauty, and the disposition of limbs. Their triumphs in these respects, however, are too often triumphs of monstrosity, as witness that vast Venus—no other term describes the idle gossip—floating across the seas in a bed of foam with head below her heels, a mere mass of whiteness, which was shown at the last Paris Exhibition; also the "Sin of Eve," concerning which the studios were in a ferment, yet which was only an example of extravagant coarseness. Some of the figures here, however, are undoubtedly of a higher type, as Tassaert's Leda, and the nude study of Lecadre. All Boucher's pictures, too, are worth attention, unless, perhaps the Venus and Vulcan, which is meretricious. It will be noticed that, except in this respect, and in their fondness for heroic groups, the French are not narrowed down to any special class of subjects. They are too versatile for this, and an increased habit of travel has expanded their sympathies. Thus, their landscape painter sits down on the shores of the Nile and watches when the sun, low on the horizon, shoots his red shafts deep into the mystic river, enchanting it with millions of burning ripples, colouring the white birds that sit solemn on the rocks, and crimsoning the sands, the rocks, and the ruins of long mute cities, once so populous and clamorous. He sketches the picturesque barge that floats with dignity (as though it were a Baron of the Exchequer in a procession) down the Rhine in the slowly gathering eclipse of evening. He lingers among the crumbling roofs and fractured arches of Rome, and the tombs whose pallor ages have mellowed, among the antique homes of the dead along the Via Dolorosa. He rambles along the curves of the Bay of Beauty at Naples, and ventures across the mountains of Arragon. He is even so cosmopolitan as to visit England, and take a sketch at Upper Norwood. These are hopeful signs. But, instinctly, the historical artist prefers episodes from the annals of his own country, and especially its great Revolution, so that Mirabeau, Marat, Charlotte Corday, Bonaparte, and the Convention infallibly appear upon his canvas. French sea-ports, French ships, French battles, French beauties—*not* racing like Hippodami and Myrtiles—are crowded, overcrowded, it might be said, on these walls; for if there be a fault in the Kensington Picture Galleries it is an excess of profusion. Another fact deserving to be remarked is that water-colour and miniature painting are, almost exclusively, English arts, the artists of no other country appearing to have taste or talent for them. On the other hand, the Continental painter has not fallen so freely as the English into the arms of photography, and while reserving the lithograph in the main, for cheap and ephemeral illustrations, still continues the practice, upon a large scale, of costly line-engraving. Among the drawings, again, not one is English, all being French or Belgian, and some are gems, as for example, a Watteau, "Love Letters;" a Boucher, "Venus;" and a Tassaert, "Wood Gatherers in the Snow." We know not whether fans may be called pictures, but they are pictures of a certain kind, and often exquisitely painted; for what but a picture, albeit painted on silk, is the scene of Puck squeezing juice into Titania's eyelids; or Cupids bearing wreaths of flowers; or The Enchanted Princess; or Venus Driving Her Car? We do not dwell, at present, on the lithographs, chromo-lithographs, mezzotint engravings, or etchings, because they fall outside our scope; but the collection is interesting. In all these galleries, by the way, one circumstance is painfully conspicuous, which is that so inordinate a proportion of the works are exhibited direct from the studio by the artists themselves, and have not found buyers. Another, infinitely less to be regretted, is the almost total absence from foreign galleries of such pictures as infest our own exhibitions, year after year, portraits of commonplace gentlemen painted by commonplace Academicians; of masters of fox-hounds whom the zeal of their tenantry has sought to make immortal in abominable "pink" top-boots, and jockey caps; of hard-headed contractors in whom the lovers of art can take no conceivable interest; of large mayors and town councillors in flaring robes and chains; of field-officers in scarlet whom no art could render attractive, and of young ladies in white dresses and rose-buds, whose faces mean just as much as their skirts. The French do not paint, for public show, their prefects, or the Germans their burgomasters. We ought, in this, as in many other respects, to take serious lessons from them. When shall we see, from an English easel, the rival of Jerome's "Cleopatre," or Tadema's "Emperor," both of which, though hanging elsewhere, are engraved in the International Galleries? But, after all, travel must remain the great school in which artists will have to study. It is rarely that a foreign work of the first merit is permitted to leave home and cross the seas. We cannot expect to strip the walls of the Louvre, or of Dusseldorf, or of Munich, or of Amsterdam—where, indeed, such a proposal would be regarded as profanation in the little, yet priceless, cabinet of M. Six, with its incomparable Rembrandts. No; we must visit Gaspar, Cuyp, Both, and especially Rembrandt, at their private residences, in order really to understand them, though we can never borrow, buy, or steal the distinctive genius of Holland—the genius which painted that superb picture — in spite of Sir Joshua's sneer—"The Night Watch," for example, if we would approach to a full conception of their work, and the way in which they did it. The Belgians are more liberal; but even they would not consent to endanger the treasures of Antwerp Cathedral—usually veiled, as too precious to be seen every day—or the House of Rubens, by putting them through a course of railroad and steamboat transit. We possess specimens of all these masters, no doubt, but not in sufficient plenitude to carry the mind through the history of the artist's intellectual progress. Nevertheless, there are brilliant pages to be read in the galleries of the International Exhibition, and the opportunity for reading them will be a brief one.

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THE EXHIBITION AT THE ROYAL ACADEMY.

Water Colours.

THIS year's exhibition contains a larger and better collection of water-colour drawings than have been previously shown at the Royal Academy. It is well that it should be so. As with architecture, so with this beautiful art, if proper space is not granted, and adequate appreciation of its merits is not shown, it were better far that the exhibition of it should be given elsewhere. But there is no reason why the art of water-colour painting should not assert its claims to the attention of the public as fully as oil painting or sculpture. Water-colour drawing is so essentially English, and appeals so thoroughly to our tastes, that the authorities of the Royal Academy should do all in their power to stimulate the activity of its cultivators. Notwithstanding a good deal of tricky effect and clever dodges to excuse want of detail and general labour, we are glad to see so much good work as appears upon the walls of the Academy, and especially so much really water-colour treatment. The habit which has become so general with a certain class of water-colour artists of aping the treatment of painters in oil, has always seemed to us a practice to be firmly discouraged. To give up the charming transparencies of water colour for the poor imitation of oils by means of heavy body colour has ever appeared to us an absurdity and folly. The usual body colour should, in our opinion, if ever used, be used as sparingly as possible. If used in imitation of oil pigment, it is a mistake in principle; if otherwise, it is generally only in order to do more easily what can be better done by true water-colour. The apparent disposition upon the part of the Royal Academy now to do justice to this branch of art gives us a hope that it will progressively be better represented year by year. The greater opportunity of meeting the eyes of all England which is afforded at Burlington House should induce all artists who know their powers to avail themselves of so favourable an occasion. There is no reason why water-colours of high class should not hold their own, though exhibited in the same building with oil paintings.

We will begin our notice with C. Vacher's beautiful views of the Campagna of Rome at two different periods. No. 632 represents it in the ninth century, with the princely buildings, though partly in ruins, still retaining much of their former splendour, and the troops of the invader are running riot over the once favoured land. In the other, No. 617, Rome has quite fallen; the glories of nature now rule over the charming scene —the old military road, with its carefully-shaped paving-stones, remains, indeed, but only to offer an easy passage for the carriage of the corn and the grape. Where formerly were the terraced garden and splendid public buildings, now there remain only a few sculptured stones scattered about in picturesque ruggedness—and the shepherd tends his flocks of sheep or goats. Both of these drawings are excellent. The figures, too, which adorn them are particularly attractive and excellent. The atmosphere is as clear and bright as the true sunlight of Italy. The latter is the most interesting. Nothing can surpass the depth and beauty of the long line of the Appennines in the distance. The line of the aqueduct seems interminable. This artist combines with much force the most exquisite delicacy of touch, and for the most part he requires no body colour to brighten his effects. One of the finest drawings is Mr. Sydney Cooper's No. 771, "Evening in the Meadows." It is neither more nor less than one of his usual fine groups of cattle, in a luxuriant pasture on the banks of a river, with the richest glow of the setting sun. It is very faithful, as usual, to Nature. The distant cattle upon the opposite bank are especially good. He also exhibits a drawing entitled "January in 1871" (No. 711), which is a capital study of sheep in the snow. The snowy landscape is very slight, but effective. One of the very best water-colours is W. C. T. Dobson's beautiful "Schwesterliebe," a charming picture in every way; quite as beautiful as Greuze, without his rare lusciousness. It is simply a lovely young creature nursing her sleeping infant brother, a beauteous child, worthy so fair a nurse. There is an enormous amount of labour about this painting, simple though it appears, and not a stroke thrown away. On the same side of the room, higher up, are two excellent delineations of Scarborough, by W. B. Beverley, representing the harbour under two opposite conditions. The bolder is 712, "North Pier, Scarborough, gale blowing from N.E."—a crowd of mariners and others having enough to do to haul in a smack that is entering the harbour, just having escaped the perils without, a good idea of which may be gained by the waves that are pouring over the high breakwater wall. All is hard life and fierce battle with the elements. In No. 772, "Seaport, Early Morning, South Pier, Scarboro," all is changed. The sun has just risen, and a slight sea mist, capitally rendered, not being used, as is too often the case, for an excuse to omit details, is just yielding to its influence. There is the long stretch of sand, and its concourse of fishermen and others collecting round the fishing-boats, all told with great truth and skill. One of the most successful woodland landscapes is Mr. B. E. Warren's "Surrey Woodland Scene." There is a perfect flood of golden sunshine thrown over the landscape, which makes it very attractive, and throws up the true detail. There is no mistake, as is often the case, about what trees and plants are intended to be represented. The various effects of the sunlight upon moss, the bark of the trees, the bare earth, and the herbage, is very cleverly shown. The atmosphere also is well expressed. The scene itself, with its splendid luxuriance and great distance, and glorious old beeches, may well have inspired the able hand of the artist. There is a praiseworthy drawing also by Miss S. S. Warren, of "A View on the Thames." We have long admired the power and taste of this lady; we could wish that she did not, in tone of colour and certain matters of detail, threaten to become too mannered. Her delineations of scenery, when strictly copied from Nature, are always admirable, but we do not think that a certain conventional bent adds to their interest. Her figures are very good. Beautiful Surrey has suggested several subjects for this exhibition, and no wonder, for where can sweeter woodland be seen, varied by long expanse of the verdant plain? In expressing the riot of greenery, without any heightening by sunlight or extraneous circumstances, F. W. Reynolds is most successful; No. 796 is a very good specimen; the mass of green is quite refreshing, and the figures are as good in their way as the rest of the pictures. A less important, but quite as conscientious rendering of woody scenery, is No. 761, also from Surrey. Mr. Reynolds has also two other examples equally true to Nature, though more slightly treated. What strikes one most in this artist is the unhesitatingness of his touch, which doubtless shows his power. C. N. Henry has a faithful sketch in oil, entitled, "Mending the Nets." It seems to have been rapidly painted, but is a wonderfully true bit of life, which at a short distance gives the idea of much higher elaboration than has been spent upon it. It is not unlike a study of P. Du Hooghe's. There is, perhaps, no more striking picture than W. P. Burton's "Blythborough Church and Farmyard, Suffolk," 648. At first sight, however, one would be inclined to think the sky overdrawn, but when we remember how often we have seen sunsets which we should have considered exaggerations if it had been possible to put them on to paper or canvas, we should hesitate to pronounce too dogmatically —but we certainly do not remember to have seen such a sky. One reason for its unnatural appearance may be the apparent impossibility of getting these sunset hues without actual light. At any rate, the contrast of the copper sunset and bright red brickwork is far from pleasing. About the accuracy and beauty of the drawing as a whole there can, we imagine, be no question. The farm and all its adjuncts of carts, straw heap, cocks and hens, are delineated in his most faithful manner, and with considerable breadth. While we are noticing domestic fowls, we must not neglect Mr. H. Weir's "So Happy!" We suppose that ducks, if properly disposed, are not troubled by the size of their families. The lady in the present instance has a brood of thirteen, all of which though tolerably attentive to their proud mother's quack, are disporting themselves in true duckling-wise. It is a pretty bit of duck life, told from long observation of the habits of the bird and its young.

How few can truly express the various qualities of water is curiously shown in the present exhibition. Very little is liquid, scarcely any is really wet, and that, though there are many excellent draughtsmen of the shape of waves and water-tumble. We do not wish to see a pleasanter picture than Mr. S. P. Jackson's "Fresh Breeze at the Land's End." The fresh wild flowers, the lively wildfowl, the wild rocks tumbling over each other, are painted with great power and facility. But the water, though natural enough in wave-form, and excellent as a proof of accurate observation, is woolly, and in fact not water at all. Nearer to the mark, though still insufficient, are B. L. J. Boudichon's two studies of sea, No. 674, "Stormy Sea near Hastings," which is capital as a bit of drawing—the artist has exactly caught the shapes of the waves, rushing one over the other; but he has been far less successful in giving that liquidness and wetness which always, even in the roughest weather, belong to water. The same fault occurs in 729, "West Wind," a sketch at Hastings; but this also is noticeable to a greater degree in most other delineations of water. J. Mogford, for example, paints sunlight in a marvellous manner, as may be seen in No. 630, "Vestiges of the Past—King Arthur's Castle, Tintagel." The blaze of the sun is quite dazzling, and casts that sort of glow over the scene that almost blinds one; but his representation of water, as in 733, is far from satisfactory. Of course it is much easier to represent still water faithfully than when it is in violent motion, but even here many have failed. W. B. Murray's "Peasantry near Paris" is an excellent bit of water-side life, full of quiet character and unpretentious—a point not a little in its favour in these sensational days. There are many other drawings worthy special notice, which we must leave to a future occasion.

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ROAD-ROLLING.

TWELVE months ago Mr. Frederick A. Paget, C.E., reported the result of his investigations into the economy of rolling newly-made and newly-repaired roads by horse-power and by steam-power, and the chief result obtained was that rolling broken stone freshly laid down is not merely a convenience to horses' feet and carriage wheels, and a saving of horse draught and wear and tear of harness, but that it is a positive saving in the cost of maintenance of the road; so much so that he shows a high probability that £140,000 a year might be saved to the ratepayers of the metropolitan parishes in maintenance alone; and to this extent every ratepayer is interested, whether he keeps horses or not; but to those who keep horses the saving is much greater, for one ton draught on an even road is at least three tons over loose stones. Sir John Burgoyne estimates the saving by horse-rolling at 25 per cent. Mr. Lovegrove, surveyor of the Hackney district, states that properly consolidating road material by the roller will save at least one-fourth of the bulk, and the road will maintain its proper form during the period of wear. Mr. Mitchell, of Melrose, who has managed the roads in the district of Earlston and Lauder, in Scotland, for more than twenty years, comes to the conclusion that roads now costing £24 per mile per annum to keep up would cost but £13 8s. if rolled, being a saving of £10 12s. per mile; but from this must be deducted the cost of rolling, and, taking a six-horse roller, Mr. Paget states that the cost of this per mile per annum is £1 8s. 5d., being a clear saving of more than £9 per mile per annum, or 37½ per cent.

Mr. S. F. Holmes, the Borough Surveyor of Sheffield, has used a horse roller for twenty years, and the saving it effects is from twenty to thirty per cent. The wear on any road—

that is, its pulverisation to dust, or the grinding of the materials into mud, according to the weather—is much more considerable than would at first be credited. Mr. Burt, of the firm of Mowlem, Burt, and Freeman, is of opinion that one third of the road material used in London is literally wasted by being ground up by traffic before the actual consolidation of the road. "The metalling is, in fact, acted upon by the traffic just at the time when its loose state renders it most unfit to bear any load. The stones are more or less crushed in or rolled about by the cart wheels and hoofs before binding together, the sharp corners get knocked off, the stones themselves thus rounded off, and they can never set together like wedges, and interlock, as they should do in order to make a durable road." When a roller is not used, the road can only be repaired in patches, because if any great length of new stone were laid down, it would bring the heavy traffic to a standstill, but with a roller a considerable length can be laid down at once. Mr. Paget remarks that "the absence in England of central authority, and the independent way in which districts are managed by local boards, will probably for ever render it difficult for the public to be attended to in preference to the ratepayers. It would be scarcely fair to expect ratepayers to pay for the comfort of the general public; they must naturally look to economy as long as road-maintenance is not dealt with as an imperial undertaking. The great saving in maintenance is fortunately a sufficient reason for the adoption of road-rolling, though there can be no doubt that if the annual sums expressing the wear and tear of vehicles, horseflesh, and harness, on unrolled roads, could only be got at, they would turn out to be enormous." Where the draught is heavy, the road surface must necessarily be torn up by the hoofs of horses, and injured by the jolting of the wheels, to a much greater degree than on a smooth road, which is only worn away by the friction. The advantages to the public of horse-rolling may be summed up by stating that (1) it saves in wear and tear of horseflesh, by diminishing the draught, and by lessening the chances of horses stumbling and breaking their knees on the loose stones; (2), by the same diminution in resistance to draught, it proportionately diminishes the wear and tear of carts, carriages, and harness; (3), it accelerates the traffic by allowing a greater speed; and (4), the traffic is also furthered by there being no interruption in the road, caused, on the present system, by frequently patching up the metal, and from placing tressels and large stones on the road, in order to force the vehicles to pass over the loose stones.

Good as the results of horse-rolling are, however, steam-rolling is preferable. The horse-roller, with its long string of six or seven horses, interferes very much with the traffic, and completely blocks up the road when the roller has to be turned round, which is very often. With the use of steam all these objections fall away. The steam-roller produces no interruption of the traffic from time taken up in turning the machine, nor from slow progress of the rolling on account of light weight. The steam road-roller can completely consolidate from 2,000 to 2,400 square yards in a day of ten hours. The steam-roller can be rapidly turned, and be made of almost any weight endurable by the road; while its smoothing action from this extra weight and its possession of a motive power not requiring the metalling for such fulcra as the horses' hoofs, is much superior.

Various weights have been given to steam road rollers. The roller used in Liverpool is thirty tons, but this weight has been found to injure gas and water-pipes, and from the figures given by Mr. Paget it appears that this roller bears with a weight of 5¼ cwt. per inch run. The roller used in Sheffield weighs 25 tons, and this has been found to injure shallow drains. The rollers used in Paris for old roads weigh from 24 to 30 tons, bearing with a weight of 8 cwt. per inch run. The roller used in Hyde Park, hired of Messrs. Moreland and Son, bears with a weight of 6 cwt. per inch run. Messrs. Batho and Clark's new roller, now at Birmingham, bears with nearly 5 cwt. per inch. The most useful weight now recommended is 15 tons. Comparing these with the heaviest and best sample of horse-roller, it is found that the water-ballasted roller of Messrs. Amies and Barford, 5ft. 6in. wide, weighing 10 tons, presses with only about 3 cwt. per inch run. One of the two objections to the steam road-roller—the other being its weight—is that it frightens horses; but that may be done away with by blocking up the thoroughfare, as they do at Islington; and where that is not done, harnessing a horse in front of the engine has been found to have a quieting effect on other horses. Mr. Paget quotes some observations made by Mr. W. Bridges Adams at the Society of Arts, to the effect that "the startling horse is simply a wild beast, and no one has a right to bring a wild beast into the streets or roads; and if a fine is to be levied, it should be on the owner of the wild beast, and not on the well-behaved, orderly engine. Horses that go into the army are not addicted to taking but rather to giving fright, and it should be simply disreputable to be the owner of a wild beast. The horse should be as noble in his qualities as the gentleman who owns him—gentle, brave, and intelligent. What grooms call a 'fool of a horse' is not worth keeping, and every horse worth keeping is capable of education."

In comparing the cost of road-rolling by steam and by horse-power, Mr. Paget says that Mr. Howell, the surveyor of roads in the district of S. James, states that the cost of a 7-ton horse-roller is £2 per day. A 15-ton steam-roller can be moved at about the same expense. In the city of Brooklyn, New York, the work done by the steam-roller is represented by 2 as against 1 by horse-roller, and the cost is as 1 by steam to 2 by horses; the result, therefore, is that the steam-rolling costs one-fourth of the horse-rolling. In Calcutta the estimated cost of rolling 44,361 square yards by bullocks is £269 5s. 6d. The actual cost by steam-roller is £146 4s. 6d. In Bombay the saving is estimated at £10 per mile over the ordinary rammers of the country. At Birmingham the cost of road material is £13,000 per annum; and Mr. Heaton, of that town, estimates that by steam-rolling a saving of £5,700 would be effected. Mr. Newlands, the borough engineer of Liverpool, says, with regard to Messrs. Aveling and Porter's 30-ton roller, "our roads are in much better order, and easier kept clean than before its use, and our bills for macadam are not so heavy." Mr. S. F. Holmes, the borough surveyor of Sheffield, finds the saving in the cost of macadamised roads to be even greater than when rolled with a horse-roller, and he has no doubt it will increase the saving at least 40 per cent. over unrolled roads. The results obtained by using the 15-ton Aveling and Porter roller by Mr. Edward Buckham, lately surveyor of Maidstone, are economy, durability, comfort, and uniformity of section of road, and he considers that the constant use of a steam road-roller would effect an economy in road maintenance of at least 20 per cent. Mr. Tomkins, the surveyor of S. George's, Hanover-square, says that one-third of the material is saved. Mr. Mann, the Superintendent of the Department of her Majesty's Commissioners of Works, says that his experience in steam-rolling, as compared with horse-rolling, leads him to conclude that the estimate of a comparative economy of one-third in material and labour would be below the mark. Mr. Paget quotes the opinions of many other surveyors to a similar effect.

These opinions, however, do not go unchallenged. Mr. Burt, of the celebrated firm of paving contractors, stated that lately they had paid some attention to steam-rollers, and are of opinion that they are much too heavy, crushing the material in proportion as their weight is increased. "The mixing of a foreign material, such as gravel or sand, is very objectionable, as it is impossible to make a solid surface with it." Now we think there is a good deal in this, and our opinion is that if a thin coat of stone, say one stone thick, be laid on a hard old road, even though it be watered and picked up beforehand, the stones will be crushed by the heavy rollers now in use—twenty, twenty-five, and thirty-ton rollers; but if the thickness of the layer system be considerable, say three inches or more, the action is quite different.

In that case the stones are not crushed, but merely pressed together, and the voids are filled up, forming a solid mass, without hogging or other extraneous matter being required; and our conclusion is this, that where a thin coat is put on the use of the heavy roller is objectionable, but that when a coat of something like three inches is put on, the weight of the roller need only be limited by considerations of what weight the large gas and water pipes will bear without injury.

Classifying the streets of London, Mr. Paget brings them under four principal zones round S. Paul's. "Within a circle of about two miles radius from S. Paul's, enclosing an area of some thirteen square miles, we should find that all the streets are paved. Another circle, or perhaps rather an ellipse, with the Thames from the Tower to Somerset House as its major axis, would enclose the principal Guernsey granite areas; further out we should find, still, of course, dealing with the generality of minor roads, a zone mainly composed of flint roads, until, at the furthest distances from the City, and of course in regions of lesser traffic, we reached the outermost zone of gravel or pebble roads. It is, of course, at once seen that, as the traffic increases towards the centre of the web, the roads have to be made stronger and stronger, until a centre is reached entirely paved with the hardest granite."

In the thirty-nine metropolitan parishes and districts, Mr. Paget finds that there are at least 1,126 miles of macadamised road, and that from the returns made to him by different London surveyors, he estimates that the average annual cost of maintenance of the macadamised roads in London, exclusive of cleansing and watering, is £280,750, or at the rate of, in round figures, £250 per mile, and seeing that, from not less than seven estimates, the saving in maintenance by horse-rolling is 40 per cent., and, moreover, that the further saving by steam-rolling over that by horse-rolling is one half greater. it seems to result in a fair estimate that £140,000 a year might be saved to the London ratepayers by a proper system of steam road-rolling.

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THE ARCHITECTURAL CONFERENCE.

We think it may safely be said already that the Architectural Conference held at the Institute of Architects this week has been a success. The attendance of both country and London members has been large, and the interest shown in the subjects debated has been decidedly great. What results it may lead to cannot yet be determined; but they will not cease with the proceedings of this week. The delegates from several provincial societies, and architects from Scotland and Ireland, will return home, and carry with them the information they have gained, or the experiences with which they have found their previous opinions have agreed or otherwise with those of their fellows.

The opening meeting took place, as advertised, at two o'clock on Monday afternoon, when the President of the Institute made an able address, which was well received by a crowded meeting. He described to the meeting most of the operations of the Institute in architectural matters for years past, and touched upon the principal questions that have arisen. Perhaps the point in the address which elicited the greater part of the discussion was that vexed one of quantities, and of the desirability of their being taken out by architects for themselves, and of their being made part of the contract. The President evidently inclined to the opinion that, in many circumstances, it was more than justifiable that architects should do the former, and that the most equitable course between employer and builder was that they should adopt the latter custom. Architects from the provinces supported the statement that it was often impossible to obtain assistance from surveyors, and that it became a matter of necessity that architects should take out their own quantities. The Scotch practice, however, seemed generally to agree with that of London in this particular. As the matter was postponed for future deliberation, we shall not now pursue the arguments raised on this question further than to say that, as in many others, much can be and was said on both sides. This discussion gave rise to another, upon the professional status of the surveyor as compared with the architect, and some eminent members of the surveying branch complained that the Institute's bye-laws prevented gentlemen who took out quantities for others rising to the position of Fellows; and, further, it was arranged between the architects' and builders' societies that none but Fellows should act as umpires in disputes between architects and builders. These gentlemen urged, with some show of reason, that these disputes were generally upon points upon which they were specially trained. On the other hand it was alleged, and the allegation is a grave and true one, that the relation of surveyors towards builders is not so independent as that of architects. Other matters broached in the address were subsequently argued at length, after papers read in the several sections.

At the ordinary general meeting on Monday evening, to which all the architects attending the Conference were admitted, Mr. F. C. Penrose, M.A., Fellow, read an interesting paper on "The Decoration of S. Paul's Cathedral," which was discussed with great animation; but to this we give separate attention in other part of our journal. Tuesday, May 23, was a day of hard work for the Conference. A large party met at the British Museum, at 10·30 a.m., and were conducted over the department of antiquities by Mr. R. P. Pullan, Fellow, Mr. Newton, and Dr. Bird. Their course led them through the rooms which exhibit the recently discovered tomb of Mausolus, with its powerful and dramatic character of art, and the still more refined remains of the Temple of the Parthenon, at Athens; and particular attention was given to the evidences of colour found so profusely as to make it evident that the whole of both of these and other important monuments were treated throughout with polychromy. The Egyptian rooms were then visited, and the Etrurian vases examined with much interest, particularly for the evidences they contained as to architectural forms and coloured treatment; and, lastly, the unrivalled collection of jewellery of Signor Castillain, now on loan at the Museum, was viewed.

At two o'clock, the Section of Professional Practice and Education met in Conduit-street, Mr. A. Waterhouse, Vice-President, in the chair.

Mr. Hebb, Associate, opened it by a paper upon "Professional Charges," and we may say that the general result of the deliberation on this subject seemed to be that some modification should be made in the usual commission on cost, according to the nature of the work. This is now done in Germany with the sanction of the Government, and while a lower rate is accepted for large plain works, a higher one is demanded for small and rich ones, and the average is said to be about 6 or 6½ per cent., instead of 5 per cent.

Professor Kerr read a paper upon "Competitions," which was clear and concise, and advocated that architects should not consent to compete unless all the competitors were properly paid; and a recent competition was alluded to, where the proposers, a firm of practical men of business, avowed themselves utterly unable to understand how architects could engage, as they do, in competitions on their present one-sided and unbusiness-like basis.

The three next papers, by Professor Lewis, Mr. T. Roger Smith, and Mr. Spiers, treated of different branches of the same subject, "Architectural Education and Examinations." All that has been done towards this end was detailed, and though expressions of regret were made that no system existed, as in France and Germany, it seemed generally to be thought that the advantages enjoyed by students was great, at any rate in London, and that the state of architecture abroad did not prove the result of foreign systems to be better than our own. It is gratifying to be assured, however, that it is under consideration by the Institute how to make the Voluntary Examinations available in the country by sending down the examination-papers.

In the evening the section of Archæology and Art held its meeting, A. J. B. Beresford Hope, M.P., Bart., President, in the chair.

Mr. F. R. Wilson gave a most interesting and spirited description of the ancient military and monastic architecture in the North of England. This was listened to with rapt attention, and the President said he hoped Mr. Wilson would hereafter at leisure give an extended paper to the Institute on the subject. We have recently reviewed at length Mr. Wilson's published work on the "Churches at Lindisfarne," which formed one branch of his subject.

Mr. Pullan then read a short *brochure* upon Classic Art, deploring the modern disregard for a style of art of such purity of design and excellence of construction. Mr. Burges, in reply, asserted that no one valued pure Greek art more than Gothic architects did; and the President said that right principles were common to both Greek and Gothic art, but that the latter was an advance upon the former, in that it had added the arch and vertical ornamentation to the simpler truncated work.

Mr. John P. Seddon then read a bold and vigorous defence of the practice of applying colour to architecture, both externally and internally. His paper was entitled, "On the Principles of Chromatic Decoration," and this subject was found of such interest that it gave rise to a lively discussion, in which Mr. Sharpe took part, deprecating the excess in the use of colour, and its being used otherwise than to emphasise form.

Mr. C. Rolfe, Associate, then read a paper on "The Effect of Ecclesiastical Law on the Arrangement and Decoration of Churches," and urged that on the chancel and the altar should be lavished the utmost art and cost that could be afforded, even to keeping the naves simple and unadorned; and the President remarked that concentration of effect was undoubtedly an excellent principle to act upon.

The last address was made by Mr. E. Sharpe, Fellow, who urged strongly that architects should think, design, and draw in perspective, and that geometrical drawings were only for the guidance of builders, and that architects should only present perspective views to the public. As to the question as put in the programme: "Whether perspective views should be excluded from public competitions," there was, however, great difference of opinion. Most present agreed with Mr. Sharpe in principle, that designs should be, throughout, in perspective, but alleged that many practical difficulties arose, in that perspectives were taken from other points of view from those in which the building would be seen. It was agreed by all that perspectives should not be aided by adventitious pictorial effects.

This somewhat tremendous programme was got through, to the surprise of many; but not without undue haste, and doubtless in a future Conference so much will not be crowded into a meeting. Discussion under such circumstances becomes difficult. Among country members who took part in the discussion were Messrs. Thomson and Douglas, of Glasgow; Mr. Hine, of Nottingham; Messrs. Clarke, Robson, Statham, and others from Liverpool; architects from Manchester, Darlington, and Dublin; but the names of those who have taken an active part in the Conference we hope to give more fully in a future number of our journal.

Wednesday being the Derby-day, no meetings of the sections were held; but the attractions of the turf were less powerful, apparently, than those of professional interest. A large number of architects were conducted over Lambeth Palace, in the morning, by Mr. Spooner and Mr. Christian; over S. Thomas's Hospital, at noon, by Mr. Currey; and over the Chapter-house and the Abbey, by Mr Seddon and Mr. Scott's assistants, and were courteously received by the Dean. This meeting consisted of eighty persons, all of whom were deeply gratified by seeing Mr. G. G. Scott come among them, and to see that his health is greatly re-established, Under the above guidance, many of the meeting examined the vaultings, roofs, triforium, the interesting wax effigies, and other parts and objects in the Abbey not generally seen; and Mr. Scott pointed out some discoveries of foundations of Edward the Confessor's previous church that have been recently discovered. We think we have shown, at any rate, that the Conference has not been an idle one, and its further progress we must postpone to our next.

THE SELECTION AND USE OF STONE FOR ENGINEERING AND ARCHITECTURAL PURPOSES.

AT a meeting of the Civil and Mechanical Engineers' Society, held on Friday last, the following paper was read by Mr. Arthur C. Pain, Associate Institute C. E., "On the Selection and Use of Stone for Engineering and Architectural Purposes:"—

The use of stone dates back to the earliest of times, at first for sling stones, arrow and spear heads, and in the catapult. It is not as a weapon of offence, however, that I propose to treat on it to-night, but principally as a weapon of defence against the two elements, air and water, in the construction of breakwaters, docks, and public and private buildings. For these purposes it was the first material used, and although various artificial materials, such as brick, terra-cotta, cement, concrete, &c., have been invented, and used with varying success, still it holds its own against them all; neither can we be surprised when we consider its great natural advantages. It is easy to hand, no making, baking, burning, or mixing, to be done, and widely spread in large and small quantities of all qualities all over the world. In the construction of breakwaters, piers, and arches of bridges, river walls, lintels over wide spaces, or for heavy cornices—indeed, wherever strength and weight are required, or heavy blows or weights have to be resisted, it is unequalled. It can be had of any size or shape and of any quality, from the great blocks of rough hard granite, tons in weight, used in sea defences, down to the fine even grain of the Oolites, some of which are capable of being carved almost as elaborately as wood. Some have argued that stone is not so durable as brick or terra-cotta, or indeed, cement. I have no desire to dispute the powers of lasting of these materials when good. But surely our own old cathedrals and castles, to say nothing of the Pyramids of Egypt, supposed to have been built 1,600 years B.C., are sufficient proof to show that where reasonable care is exercised in its selection, it is good for "all time." In all materials there are various qualities, and it is no argument to take the best example of say cement work, and compare it against the worst of stone, and then contend that cement dressings are as good as stone. Where clay is plentiful, brickwork is generally cheaper than stonework; but if much labour is required, as in axed arches or moulded and rubbed brickwork, stone can be used generally quite as cheaply.

If we take terra-cotta, there is no economy in its use, unless you make a great number of articles of the same pattern; even then, the burning twists and warps it so, that if of any size it is very difficult to get the work true; whereas stone can generally be had hard or soft, of various colours, and of any size. Some short time ago a gentleman, writing on stone, endeavoured to prove that stone used out of the district where it was quarried did not stand so well as in the neighbourhood, because the foreign climate did not agree with it. Nothing can be more absurd or illogical. Why should a piece of granite from Guernsey decay faster if used at Aberdeen, instead of at S. Peter's Port? How such an idea could ever have been seriously promulgated, all reasoning persons must be at a loss to understand.

Stone having so many advantages, and being so much used, it is surprising that it has not been made a branch of study in the education of the engineer and architect. The remarks of the late Sir H. de la Beche on this point, although written upwards of thirty years ago, are still applicable to the present time. He says, "There was much excuse for the accidental durability of the stones employed in public or large private edifices in the former days when the mineralogical structure of building materials was so little understood, and the architect of those times could not always have churches or castles before them, from which they might judge of the relative durability of any stone they were about to employ, the quarries opened by them being also the first worked, to any considerable extent."

The architects and engineers of the present day cannot, however, avail themselves of these excuses, for the necessary chemical and mineralogical knowledge is readily acquired, and the number of public and private edifices of various dates scattered over the country is so great that the relative durability of the materials employed in their construction can easily be seen. It is, nevertheless, well known that with some few exceptions the mineralogical character of the stone employed in public works and buildings has hitherto received little attention from either architects or civil engineers in this country, more especially from the former, whose value of a material seems commonly to have been guided by the opinion of the mason. Now the mason seems almost always guided in his opinion by the freedom with which a stone works—no doubt an important element in the cost of a building, but certainly one which should not be permitted to weigh heavier in the scale than durability; and hence many a fine public or large private building is doomed to decay even in some cases within a few years. It is a common practice for young men who are intended to be brought up to be civil engineers to serve for some time in the works of a mechanical engineer, with a view to learn the uses and properties of metals. So with those intended for the architectural profession; they are taught first to be carpenters or joiners, to learn the uses and properties of timber. Why should not a young man who is desirous of entering either profession, also learn some knowledge of quarrying and masonry by practical experience in the quarry and at the banker? Surely stone is as important a material as either iron or wood in the construction of engineering and architectural works? Perhaps no more practical engineer ever lived than Thomas Telford, and he began life as a stonemason in Scotland. The importance of a proper knowledge of the selection and use of stone to engineers and architects can hardly be over-rated. Indeed, some idea of its commercial importance may be gained by a knowledge of the fact that the value of the stone raised every year in the United Kingdom is said to be nearly if not quite £5,000,000. I shall, therefore, without further comment, commence the first part of my paper—namely,

THE SELECTION OF STONE.

Geologists tell us that the great divisions of rocks are classed according to the fossils that are found in them, and by the term fossil must be understood to mean any body, whether animal or vegetable, buried in the earth by natural causes. Rocks known by this test are termed generally aqueous, sedimentary, or fossiliferous, supposed to have been formed by the action of water on the earth's surface; these are stratified or divided into layers. From these rocks are raised most of the principal building stones, certainly those easiest to work. Other rocks are classed as volcanic: these are, for the most part, unstratified and devoid of fossils; they are supposed to have been forced up through the various overlying strata, and flown into and over the same by the action of fire. They are known generally by their columnar and globular structure. These produce not only building stone, but stones which are used for ornamental purposes more than any other kind of rock. Further, we have Plutonic rocks, highly crystalline, and destitute of organic remains. They are supposed to be all of igneous origin, but to have been formed under great pressure; they have been melted, but cooled and crystallised very slowly. They differ from the volcanic by their more crystalline texture, and by the absence of pores and cellular cavities. From these rocks we have some of the finest, hardest, and most durable of building stone. Lastly, we come to the metamorphic or stratified crystalline rocks. The origin of these is more doubtful than any of the other three classes; they contain no pebbles, sand, or angular pieces of stone or traces of organic bodies, often as crystalline as granite, yet divided into beds. They are supposed to have been deposited from water, but afterwards altered by subterranean heat so as to assume a new texture. Building stone is not raised so largely from these rocks as from the others. Many of the white marbles are, however, metamorphic. Nearly all the various systems embraced under the name of aqueous rocks produce sandstones and limestones of various kinds. It is important to remember this, as very frequently a stone is called oolitic or carboniferous from the system to which it belongs, when, perhaps, to the eye, it might not exhibit the more particular characteristics of the formation. In a paper read by our President in March, 1862, he treated of all the various building stones in each geological formation. I propose, therefore, to make my remarks more on the practice than the theory of the selection and use of stone.

In selecting a quarry from which to get the stone best suited to the purpose for which you want it great care is required. Having first satisfied yourself that stone of the size required can be obtained, and at a reasonable price, the next and most important step of all is to find out if it is a durable stone. Too much weight must not be placed on the assurance of the quarrymen that the particular bed which is the cheapest for them to get is the "best," and, by that word, I mean the most durable, not, as it is often understood amongst quarrymen and masons, the prettiest-looking stone and the easiest to work. Again, it does not follow that because certain old buildings, small or great, in the neighbourhood have lasted well, therefore all the quarries in the neighbourhood produce the same stone. In some cases the best beds have been worked out because the strata only crop out at one place, and for the same reason a quarry on one side of a hill very often produces much better stone than on the other. Specimens of stone dressed up square, sent out by the quarryman or agent, known as hand specimens, are very dangerous things to form an opinion on, because what looks very well in small pieces is really often of an inferior quality, and a stone that would appear coarse and rough in a specimen would not do so when in the mass. Stones that rub up to a smooth face are often not so durable as those of a rougher texture. To give an example, "best bed" Portland is much superior in colour and texture to "brown bed" Portland, but far inferior to it in durability. Examine all the different beds in a quarry, noting the particular grain, texture, and colour of each bed, compare them with the buildings around, and, if there be any old quarries near with the face exposed, see which of the beds stand out the most and show the old tool-marks, and, consequently, have yielded to the action of the weather least. It frequently happens that the best stone in quarries is neglected, or only in part worked, from the cost of baring and removing those beds with which it may be associated, and, in consequence, the inferior material is in such cases quarried, especially when a large supply is required in a short space of time, and at an insufficient price, which is often the case with respect to works undertaken by contract. As an economical supply of stone in particular localities would sometimes appear to depend on accidental circumstances, such as the cost of quarrying, the degree of facility in transport, and the prejudice that generally exists in favour of a material which has been long in use; and as the means of transport have of late years been greatly increased, it becomes essential to ascertain whether better materials than those which have been employed in any given place may not be obtained from other, although distant localities, upon equally advantageous terms.

The relative facility with which good materials may be obtained in a district is, to a certain extent, marked by the appearance of the towns and villages in it, the comparative cost of obtaining them being in general better shown by the character of the ordinary houses than by that of the public buildings and large mansions, the stone for which may sometimes have been brought from comparatively considerable distances. From the frequent practice, however, of selecting those stones which yield readily to the tool, and are hence commonly termed freestones, whatever may be their mineralogical characters, the most durable, and therefore eventually the cheapest, are far from being always employed. And it sometimes happens that we find the common cottages built of durable materials, while larger mansions and public buildings are not, the materials for the latter having been selected because they were soon readily worked up for ornamental parts, while those for the former may have been thrown aside in the same quarries because they yielded less freely to the tool.

In passing through the chief towns of Great Britain it will be easily seen that if more attention were paid to the mineralological character of the stone employed in the construction of the buildings, that frequent decay or decomposition, even in those erected within a few years, which we so often observe, would be avoided at comparatively small cost, and we should find fewer of our public edifices losing all traces of the finer work of the original structure. In estimating the relative durability of any given stone which may appear to resist decomposition from atmospheric influences in the country, no doubt due allowance should be made for the power of lichens to protect the external surface. These are not usually found in large towns, particularly those in which there is much coal smoke. We should not expect a sandstone, formed of quartz grains, loosely cemented by calcareous or argillaceous matter, to last so long when exposed to the weather as one in which quartz grains were firmly bound together by a compact argillaceous or siliceous substance. According to the texture and variable composition of the different calcareous and calciferous rocks, a judgment may be formed of their relative durability, and granites in which decomposition has already commenced in the felspar cannot be expected to remain firm under atmospheric influences.

The unequal state of preservation of many buildings, often produced by the varied quality of the stone employed in them, although it may have been taken from the same quarry, shows the propriety of a minute examination of the quarries themselves, in order to acquire a proper knowledge of the particular beds from whence the different varieties have been obtained. An inspection of quarries is also desirable for the purpose of ascertaining their power of supply, the probable extent of any given bed, and many other matters of practical importance.

An excellent and ready test when in the quarry is to chip a number of small pieces off each bed or block, and carefuly examine them under a small but powerful magnifying-glass. If the fracture is clean and sharp, and the grains are well cemented together, then it may be considered a durable stone; but, on the other hand, if the fracture has a powdery appearance, and the grains are ill-cemented, then the stone is very likely to decay. Another test of a good stone, not alone applicable to lime-stones, is to soak a number of small pieces in diluted sulphuric acid for some days; its resistance to disintegration under this test shows its suitability or otherwise for building purposes in a large town, as well as where exposed to the salt rains and winds in situations near the sea.

In the construction of lines of railway and other large public works stone is frequently used which is obtained from the cuttings or excavations. Now, the contractor, generally to save cost, blasts the stone, which is a most fatal mistake if durability is required. For although it may not be at first apparent, the blasting shakes the stone, and, before many winters are over the stone begins to crumble to pieces. Of course, in case of granite and other very hard stones, this remark does not apply, for having little or no stratification it cannot be quarried without blasting. If it is desired to put nothing but good stone into a structure, the material should be quarried and weathered for some time before being used, as this serves not only as a check against the use of inferior stone, but prevents the unsightly greening after erection which, for a time, so often disfigures a building, even if built of the most durable stone. At the Bath quarries some of the stone raised in the winter time is stacked in the workings and dried by coke fires in brasiers. Some stones, if wrought and put into a building green, with the quarry water in it, will go to pieces under the first frost, whilst the same stone, if seasoned under cover, will often stand well. In choosing a particular bed of stone in a quarry it must be remembered that the lowest beds are not always the best. For instance, in the Portland series the hardest and most durable bed is on the top.

It is often desirable for stone to be tested by having a chemical analysis made, also by a hydraulic pressure for the crushing strength, as well as in a testing maching to obtain its tensile strength. In all these cases the specimens should be taken from various parts of the quarry, and from each bed, and certainly not less than six specimens should be selected from each to arrive at reliable results. We now come to the second division of my paper, on

THE USE OF STONE.

Having found the quarry which produces stone of the quality you require, the next step is to specify the particular bed or beds which you desire to use. There is a great deal of looseness on this point in the practice of engineers and architects. Too often a stone of a particular district is specified without regard to the fact that, in the district named, stone of many different qualities are raised, some of which cost much more to work than others. This of course leads but to one result: the most profitable stone for the quarryman and mason is used, instead of the most durable. Another great evil is the outcry for large blocks, and the insisting that columns, figures, &c., should be cut out of one piece of stone. Many a good bed and quarry has been closed or rejected because it did not produce large blocks. Witness the case of the Mansfield Woodhouse Quarries, where the stone was only used to a very small extent in the Houses of Parliament, because at that time blocks could not be got out large enough, but where it was used it has stood exceptionally well, in contrast to the stone from Anston, which appears to have been selected principally because large blocks could be obtained.

In specifying the qualities and sorts of stone to be used in a structure. it should be remembered that in this climate decomposition sets in generally on the parts facing the S., S.W., and W., arising from the fact that the most prevalent storms of wind and rain are from those quarters. Lichens, which are a great protection to stone, unfortunately won't grow on structures in large towns, but they form an excellent shield to the stone in the country.

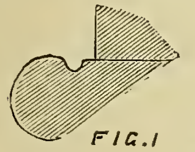
FIG. 1

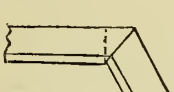
FIG. 2

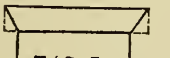
FIG. 3

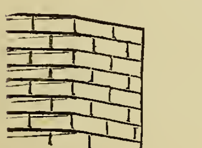
FIG. 5

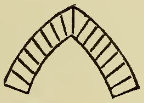
FIG. 4

A great deal has yet to be learnt as to the proper use of the various and beautiful colours of different kinds of stone, and it is of more importance to have variation of colour in a large town, because the fronts exposed to the wind and rain will always exhibit, more or less, the natural colour of the stone, not being hid by lichens, as in the country. Some stone stands very well as ashlar or for plain mouldings, but if used for cornices, plinths, or in any part where damp or where the wet stands, so surely will it decay. It, therefore, is very necessary to specify one kind for the ordinary face work and a stone of superior durability for the portions exposed to wet and frost. However durable the stone may be, a good drip or weathering should be given to cornices or heavy projecting strings, as it enables the rain not only to run off, but at the same time to carry with it any dirt or dust that may have lodged on it, which, if left, grows moss and weeds, both very injurious to the durability of the stone. Fig. 1 is a very bad section of base moulding, frequently used in Early English work, for all the wet and dirt washed off the work above lodges in the sinking, and the frost gets in and attacks the stone at its weakest point—viz., the joints.

The use of metal cramps, iron particularly, is very objectionable, they nearly always burst the stone after a time; slate dowels are the best. The stone parapet walls on the Thames Embankments are all built with slate dowels. . Some of the masonry in the lower portions of Sir Christopher Wren's towers at Westminster Abbey are specimens of the evils of metal cramps. Bedding stone properly is a most important thing. It is a vicious plan to make the bed of columns or other masonry hollow, instead of true and square with the face; it invariably causes the stone to spall at the outside of the joint, as in the case of the Holborn Viaduct, besides causing the weight very often to be thrown on parts not intended to carry it, and a host of other evils, not to mention the unsightliness of walls and columns cracked in all directions. In masonry the joints should never, as a rule, be mitred, as is shown in fig. 2: or in lintels, as in fig. 3, but as shown by the dotted lines. There is one exception to this rule, namely, in the case of a pointed arch, which should be jointed in the centre (fig. 4): not with a keystone, as in a segmental arch. Where the stratum is thin, and the structure is exposed to heavy, driving rains, the outer courses of stone are often bedded at a slight angle outwards and downwards, as in fig. 5, and the mortar is kept back an inch or so from the face. This is done to keep the interior dry by preventing the rain from driving through the joints.

In designing rubble walls for buildings they should not be shown too thick, for if they are the masons are apt to build it with two faces, and to fill up the centre with loose rubble, often with little or no mortar. If exposed to vibration of any kind, they are very liable to burst. I have seen a great number of instances of this—one in particular, a church tower in the Lake district, which was cracked from top to bottom and all round—in fact, bursting under the vibration caused by ringing the bells, and the superincumbent weight of the spire.

In walling, masons always like to put the best face of a stone outwards, and the result is you get large spaces which are filled up with mortar and spalls; few workmen can resist the temptation to put a long stone parallel with the face of the work, instead of endways. The want of bond stones is the great defect of walling generally. A good plan where the stone runs small is to build three or more courses of brickwork right through at certain levels to act as a tie. With stone from most geological formations, it is of great importance that it be placed bedwise, or as it lay in the quarry. This, if not properly attended to, leads rapidly to general decay. There are various methods of finding the beds of stone for instance—rains always run from top to bottom, or with a downward direction. Shells or fragments of shells lie flat as they would on the sea-shore. Most sandstones the streaks or layers exhibit the bed very plainly.

In conglomerates, the pebbles, like the shells, are generally lying on the flat side. Added to all these, it is generally usual for the quarryman, before sending the block away, to mark on it which is the bed. The bed is, therefore, not so hard to find as some try to show, and a little careful examination of the peculiarities of the particular stone you are using will make you to detect at once if the stone is on its bed or not. After a structure is erected, or, as in the Scotch method, during construction, it is usual if the work is of any moment, to clean it down, too much attention cannot be paid to seeing that all the mortar and slush is thoroughly washed off, for if it be not, the frost and rain will bring it off, and it gathers on the projections and under the mouldings, causing them to decay. It is a common practice when a stone gets dirty or discoloured, or is decaying, to cut or drag off the surface of the stone. This should never be done, for if the stone is dirty it can be rubbed and washed to get it clean. Stone throws out, as it were, a hard skin for its protection when first exposed, and if that skin be taken away the protection is gone, and it is very liable to decay. If the stone is really decaying, any number of new faces won't stop it. In the construction of works where much stone is used, it is very important to have clerks of works and inspectors who have served as masons. In the greater number of cases it will be found that in early life most of the clerks of works, inspectors, and foremen have been carpenters or joiners. Too often you find masons knowing nothing beyond their trade, while carpenters and joiners are a better informed and superior class of workmen. A great deal of the inferior stone that is used, and the bad bedding that is permitted, is due, I think, to the fact that the workmen know that their masters are not masons. I am not finding fault with the men who by their industry have raised themselves from journeymen to positions of trust. Far from it, it is most creditable to them; but on the other hand, it is equally discreditable to the masons that they allow the journeyman from another trade to take posts of trust, which they might fill with greater advantage, where stone is much used, if they were steady and educated themselves for it.

Although I must now come to a close, do not think the subject is exhausted. I could say a great deal more on this important material; but as I hope there will be a valuable discussion afterwards from the members and gentlemen present, some of whom are connected with quarries, I shall defer any further observations to a future time. In some parts of my paper I have made extracts from Sir Charles Lyell's and Sir H. De la Beche's valuable works, from blue-books, and other publications which I have consulted. To those familiar with works treating on stone (I am sorry to say, very limited in number), these extracts will be at once apparent. In conclusion, if engineers and architects really desire durability, they must be prepared to pay a reasonable price, both for the raw material and the workmanship on it; and they will, I think, find they will be heartily seconded in their endeavours, both by the quarryman and mason, in the selection of the best stone; and in the long run it will prove not only one of the best of building materials, but the cheapest.

At the conclusion, the President (Mr. **Walton**) said he had listened with much pleasure to the paper, and he would call on some of the practical gentlemen present to give their experience on the subject.

Mr. **Clarkson** said that practical experience was very necessary in the proper selection of stone, as well as theory—witness the failure of stone for the Houses of Parliament. He considered limestones better than sandstones. He thought the Cragleith an exception to the rule, for it was a most excellent stone.

Mr. **Cross** considered it immaterial which way the stone was bedded, provided it was not face-bedded. The quality of a stone was very difficult to discover. He did not think the test referred to by Mr. Pain—viz., the examination of stone by a magnifying-glass—a good one. He considered that good stone had a powdery fracture; but granite that broke with a soapy fracture would not stand, because the fine parts cementing the other portions decayed quickly. With respect to Portland stone, he thought the "best bed" the most durable, and that the "brown bed" decayed fastest; the "best bed" was cream-coloured, but the Portland stone must not be selected by the colour. Granite, although it was not generally considered to have a bed, had one, for masons could split it very much better in some directions than others; in many quarries the bed was as plain to see as in York stone or Grit stone. He believed stones which had most bed, such as paving-stone, were strongest by about 20 per cent.

Mr. **Butler** said he had been brought up as a quarryman and mason. He quite agreed with Mr. Pain that architects were very loose in their specifications with respect to stone, and that it led to a great deal of bad stone being used. He also remarked that clerks of works were generally joiners by trade, and that they very often rejected the most durable stone. In Bath, Box Ground stone was mostly used, because after the lists or clay lands were cut out it was better than either of the other five descriptions of Bath stone. Coombe Down stone stands very well in Bath, Box Ground stone decays in London and by the sea-side. He should like very much to know what was the cause of Portland stone throwing out a sort of white powder after it was put up in London; he suggested it might be by the sea soaking into it on its way up by ship. Did not agree with Mr. Cross that brown Portland would not stand; he considered it the best stone. Independently of stone standing better on its bed, he thought it looked so bad in the building with the grain of the stone all kinds of ways.

Mr. **Cooper** thought that sandstone had a great advantage in being comparatively soft when quarried, but became very hard on exposure to the atmosphere. The power of stone to absorb a large quantity of water did not prove that it would not stand the frost. He considered that scientific investigation into the properties of stone was of great use. It was as absurd to specify "best stone" as it was "best iron," because there were many qualities superior to the trade term of "best."

Mr. **Whitaker** instanced the want of proper selection in many structures, for durable stone is found side by side with bad. He considered that what Mr. Cross thought was the bed of granite was the veins. Granite was not a stratified rock, therefore could not have beds, in the geological sense of the word; but it has a peculiar grain, which made it easier to split some ways than others.

Mr. **Morrison** said that stone varied very much in every quarry, and this accounted for the fact of the Museum in Jermyn-street standing so much better than the Houses of Parliament. He said engineers having work abroad were at a great disadvantage, because they must use the stone of the district, which had, perhaps, never been used before. But a knowledge of the different qualities of stone obtained at home was most valuable. He drew attention to the absurd notion that all granites were durable; it was a very great mistake, for there was bad granite as well as good.

Mr. **Haughton** believed granite had a bed. Geologists were now engaged on the question whether granite should be classed as metamorphic, and not as a Plutonic rock. He considered the cause of stone decaying was, in a great measure, owing to the rate at which structures were put up; it gave no time for good stone to be selected—if, indeed, the quarry could supply it. Another cause was, everything was cut so low in price.

Mr. **Hunter** said a good mode of testing sandstones was with a knife; it was easy to see if the stone was of equal quality. Another was to crush a small quantity and put it into a glass, when it would be found that the stone which discoloured the water least was the best.

Mr. **Wilkinson** thought that granite had a bed; most quarrymen considered it had.

Mr. **Clarkson**, in explanation, said that "the bed" of a stone meant the original plane of deposition of stratified rocks.

Mr. **Large** agreed with some of the previous speakers, that granite had a bed. He considered that a good stone had a clean fracture, and a bell-like ring; strongly advocated the use of dowels instead of metal cramps. He considered Mr. Pain was quite right to condemn the practice of blasting stone to be used as masonry; in his practice he had always avoided it.

Mr. Pain, in reply, said notwithstanding Mr. Cross differed from him, he still held that taking the two beds the most durable stone was found in the top or "brown bed" at Portland, and in that opinion he was supported by many competent authorities. With respect to the question—had granite a bed or not? it had been very ably answered by some of the previous speakers that, looking at the strict meaning of the term "bed," granite had not a bed the same as stratified rocks. Mr. Butler suggested that the white powder on Portland stone after erection was due to salt. He did not think so, for other stones that did not come by sea were troubled with it; he considered it was caused by the lime in mortar, or the chalk in cement working through the stone. Mr. Haughton thought that stone could not be supplied from a quarry of durable quality quickly enough for large buildings such as the New Law Courts. But in answer to that he would suggest that at no time were quarrymen better able than the present day, by the use of machinery, to supply large quantities in a short space of time; besides, the best course would be to use stone from all the best qualities from various formations. By that means an agreeable diversity of colour could be had, as well as durability.

Owing to the lateness of the hour, the President said he would not detain the members and gentlemen present, but informed them that the Stone Working Machinery Company had invited them to see their works at York-road on the 27th inst. which he hoped the members and visitors present would avail themselves of.

A vote of thanks was passed to the author for his paper. Specimens of decayed stone from Westminster Abbey, furnished by Mr. Poole, and a working model of Coke & Hunter's patent saws, were exhibited at the termination of the meeting.

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ARCHITECTURAL ASSOCIATION.

An ordinary general meeting of this Association was held on Friday evening last, in the meeting room of the Institute, the Association's room being under preparation for an exhibition of sketches, &c., for the behoof of the gentlemen attending the Architectural Conference. Mr. J. Douglass Mathews, Vice-President, occupied the chair. Messrs. L. W. Crace and F. H. Godwin having been elected members, on the motion of Mr. Quilter a vote of thanks was unanimously passed to Mr. Williams, of Her Majesty's Office of Works, and architect of the new buildings for the General Post Office, for his kindness in allowing the members to visit that building, and in accompanying them over the works in progress. The Chairman, in putting the motion to the meeting, said that, whatever might be said of the conduct of the Government in regard to the designs for the work, there could be but one opinion as to the goodness and thoroughness of the construction. The Chairman also stated that the exhibition of drawings in connection with the Conference would be open to members of the Association on the presentation of the card of a member of the Institute. He also stated that the Committee had under consideration the desirability of holding an exhibition yearly in connection with the Association. The Committee had endeavoured to induce the Committee of the Royal Architectural Museum to join them in the undertaking, but satisfactory arrangements could not be made with the Museum authorities. The Committee of the Association had therefore determined to hold an annual exhibition themselves, and the time chosen is the opening of the annual session of the Association, at the end of October or beginning of November. The exhibition will remain open for a week, the opening *conversazione* of the season being the opening night of the exhibition.

Mr. Quilter having detailed the arrangements for the annual excursion of the Association, which will take place at the end of July or beginning of August, to the neighbourhood of Ely, Lynn, Wisbech, and Boston,

Mr. G. H. Birch read a paper

ON SYMBOLISM AS INFLUENCING CHRISTIAN ART, ESPECIALLY ARCHITECTURE.

The author said he found in many of his brother students in architecture more or less of ignorance as to certain peculiarities of plan or arrangement and disposition of parts visible in the ecclesiastical buildings of the Middle Ages. It had been frequently asked why those peculiarities existed, or what they signified. Symbolism had been co-existent with humanity. Certain material forms had always been typical of certain truths or sentiments, and these forms thus became the words of a universal language which every living soul instinctively comprehended. In the relations betwixt the Deity and man symbolism arrived at the highest and noblest development, but it was also apparent in all the ordinary occupations and pursuits and in the social intercourse of every-day life. Language is symbolism, words but represent ideas; animate and inanimate nature supply types. There is scarcely anything in connection with man and his works that does not show the presence of symbolism. Among the Egyptians it was carried to its fullest extent. The very language of the Egyptians was expressed by symbolical forms. In the hieroglyphic inscriptions, figures, animals, birds, &c., took the place of words. The lofty propylæum and the inmost recesses of the sanctuary were alike covered with these records. Intellect, Power, Goodness, and Might were worshipped under the forms of Kneph, Amun, and Pthah. Osiris was but an incarnation—a manifestation of the good principle, as Typhon was of the evil. They believed in a future state and in final judgment. Such was the religion of the ancient Egyptians, and under such influence were raised the mighty pyramids, the colossal halls of Karnac and its huge propylæa, and the lovely temples of Edfou and Philæ. Springing from this system, and very nearly akin to it in some particulars, was the religion of ancient Greece. Here, in a thousand beautiful myths and allegories, inculcated by Orpheus and Pythagoras, we find the golden thread of primeval faith beautifully interwoven, and the Greeks instinctively clinging to and applying and stamping with an individuality exclusively their own all that was idealistic and beautiful applied to Zeus and Poseidon, Apollo, Demeter, and Dionysius the attributes applied to Kneph, Amun, and Pthah. In Hindostan, inhabited by the great Aryan branch of the human family, Krishna suffering and Krishna triumphant is a myth in which the thread again appears; in short, every nation of the earth, in recognising the Supreme Being, has made use of symbolism. Out of this system grew Christian symbolism. There are innumerable instances in the New Testament of symbolism. Lessons are conveyed to us through this medium. Throughout the whole of the Sacred Writings, especially in the Pauline epistles and in the Apocalypse of S. John the Divine, symbolism proper and symbolical ideas abound. It was most natural, therefore, that the Early Christians should avail themselves of such forms and ideas, and employ a symbolism which had been handed down from times so remote, and to which they could attach such significant importance. In the early days of this era, when to declare one's-self a Christian was to sign one's own death-warrant, and when for four centuries the sword of persecution was never sheathed for long, the use of such symbolism to distinguish friends from foes was particularly valuable. Timidly and cautiously at first they hid under forms in which the heathen and uninitiated saw only their own fables and myths, but which presented to the gaze of the devout worshipper the holiest mysteries and verities of his faith. One of the earliest symbolical forms or signs used by the Early Christian Church was a representation of Orpheus playing on his lyre, surrounded by birds and beasts of forms the most uncouth and rude. The Roman soldiers, or spies or informers straying in these subterraneous haunts, would pass such a representation by unnoticed; but the Early Christian saw in Orpheus his Divine Lord the Creator of all nature, at whose command the lion and the lamb did lie down together side by side. In Eurydice stung by a serpent he saw himself a child of fallen Adam suffering from the serpent. Our Lord as Orpheus sought that which was lost, descending into the tomb and hell, and bearing thence in triumph the souls there chained, and thus all the fundamental doctrines of the Christian faith were combined in one symbol or type borrowed from the heathen, and thus conveyed by the medium of the eye, when it was certain death to receive them through the ear. Representations of the Good Shepherd, as a beautiful beardless youth, surrounded by his flock, and sometimes bearing one of them on his shoulders, frequently occurred in early Christian art. Another symbol of Christ was the Lamb, and another, again, the Lion; these were of frequent occurrence; and lastly, as the Christians waxed bolder, the Cross. The three latter are symbols of Christ. Many others are to be found, and of the highest antiquity, such as the pelican, the vine, the cedar, the fish, the eagle, the serpent, and the fig tree; but these are not symbols: these are types or figures. A symbol teaches doctrine, such as the Lamb and the Cross, while figures but express attributes. Christ is symbolised by the former, but only figured by the latter. It was in the catacombs, the cradle of the Christian faith, that symbolism was developed. But the time is when the Church is no longer in darkness; she has emerged from the catacombs, the once hated sign is borne aloft, the royal banners forward go as the sign in which alone is victory. Cæsar himself bows the knee in lowly homage. Does she put away from her these types, and symbols, and mystic forms as no longer needing them? No; she retains them specially, for they are to her doubly precious. Lessons are to be gathered from them now in the full blaze of noonday, as they were gathered formerly in the gloom of the catacombs. Symbolism is to assert its sway over the arts.

Mr. Birch then proceeded to trace this influence upon architecture. He said that in the construction and decoration of our churches, the places of our spiritual worship, it is apparent everywhere, from foundation to topmost pinnacle, not proceeding from the whim or fancy, but with a meaning, and an appropriate design for every part. More especially is it noticeable in the plan, for nearly all churches are reduceable to three forms—the cruciform, the rectangular, and the circular. In pointing out the symbolism of plan it would be better to commence with the rectangular or oblong, because this is the earliest type of the form of a church. The apostolic constitutions define that the church must be oblong and point to the east, a point which Durandus enlarges on. As Christianity increased it was but natural that the early Christians should avail themselves of the buildings not absolutely profaned by impious rites, as some of the heathen temples were, and the most appropriate in their eyes were the basilicas, or halls of justice, a long rectangle with a raised tribune at one end, with a semi-circular recess, sometimes with double aisles; this was the prototype of the first material fabric of the church, a type never lost sight of since, and reproduced continually at the present time. But Christianity stamped an individuality about these buildings exclusively her own. It soon became the custom to decorate these royal halls, these earthly palaces of a heavenly king, and to enrich them with gold, and colour, and precious stones, and to call the various parts by names, symbolising the uses to which they were applied. There were three classes to be accommodated—the clergy, the stewards of God's mysteries; the faithful, those in the enjoyment of the full privileges of the Church; and, lastly, the catechumens, those who were in preparation, and the penitents. Hence, the churches were divided into three principal divisions. The sanctuary, or place for the priests; the, naos, or nave, appropriated to the faithful, and the narthex or porch, to the catechumens and penitents. There were other subdivisions, but these were the great divisions, and so this type became universal both in the East and in the West. The reason for calling the part used by the faithful the naos, pro-naos, or navis, was, that it symbolised a ship or ark. Our Lord preached from a ship, some of his disciples were fishermen, and were called to be fishers of men, and it was from a ship that the disciples captured that miraculous draught which prefigured their future success. On entering a church, the triple division is everywhere apparent: from west to east, nave, choir, sanctuary; from north to south, north aisle, nave, south aisle; from pavement to roof, arcade, triforium, clerestory; and again, nave, transept, choir, in the windows; above, below, around us, is repeated the thrice holy, holy, holy. The incarnation is symbolised ordinarily in the doors. He declared himself to be the door through which to enter into the fold. Hence, doorways, especially principal ones, are more often double, to signify the two natures, the human and the divine; but united under one arch, as not two, but one Christ. For the same reason, a majesty or representation of our Lord in glory, is frequently sculptured in the tympanum. The Holy Orthodox or Eastern Church, a church which never changes in practice or doctrine, like the Western, but clings to primitive forms and practices, paints the Incarnation on the beautiful gates, the central door of the Iconostasis. Another great doctrine-influencing plan, both east and west, is the Atonement, whose symbol is the cross. In the Latin or Western Church, this was usually in the form of the long or cross of suffering; in the Eastern, the four arms were equal or nearly so, as in the Church of the Eternal Wisdom at Constantinople, S. Mark's, Venice, and elsewhere. Hence the distinctive names of the two forms of crosses, the Latin and Greek, the Latin resembling the actual cross on which the sacrifice was offered, and the Greek stretching out its four arms equally to the four quarters of the world.

The plan of nearly all the cathedrals in Northern Europe is cruciform; but there is a peculiarity attached to some of our English ones which demands a passing notice, and that is the double cross so noticeable at Canterbury, York, Salisbury, Worcester, Rochester, or Durham. A practical reason may be given for this, but the symbolical one is the inscription placed over the head of the cross. Some say it is the distinctive mark of a metropolitan church, but though applicable, perhaps, to Canterbury and York, this is certainly inadmissible with respect to the others, which are not, and never were at any time, metropolitan churches.

As the east is the quarter of light, in like manner the west typifies the quarter of darkness and of sin; hence the principal door is always at the west-end, and the arch is often decorated with various sculptures representing scenes in every-day life, the signs of the zodiac, the occupations of the different months of the year, even amusements, teaching that all must be left outside; the cares and troubles, anxieties, and pleasures of this life must not enter into the house of prayer, but, like the evil passions which disfigure and distort human nature, symbolised under the form of hideous monsters crawling under the church's eaves, and starting from its holy walls, —all must be left without. Reverting to east and west for one moment, another reason may be this—the Heathens placed their Paradise in the West; the Isles of the Blest were beyond the Western Ocean in the portals of the setting sun, floating masses of crimson and gold on a sea of azure, against which idea the Christian boldly turned his back, and worshipped towards the day-star of the east.

On entering the church the eye immediately falls upon the font, placed symbolically at the entrance; this is frequently eight-sided, in allusion to S. Paul, who alluding to the eight saved in the ark, said that the like figure doth also now save us the triumph of the virtues over the vices. The passage of the Red Sea, the ark, the baptism in Jordan, are subjects continually chosen for its decoration.

The pillars of the church represent the apostles in very many Continental churches. Figures of the apostles are placed over each pillar. Durandus gives a symbolical reason why the windows are splayed so that the aperture is larger in the inside than on the outside. Speaking of the windows, he says that they represent holy scriptures, and as they exclude wind and rain, and all things hurtful, and transmit the light of the true sun into the hearts of the faithful, they are wider within than without, because the mystic sense is the more ample, and precedeth the literal meaning. According to a very ancient primitive custom, men generally occupy the south side of the church, women the northern; more honour has usually been assigned to the south side. The south side of a church is very often richer than the north; the south porch is invariably so. In old churches, at the eastern extremity of the nave stands the rood-screen, or screen of the cross. Now there is a very beautiful symbolism conveyed in this. In passing from the nave into the chancel, we must pass through this, and as the nave is the church militant, so is the chancel the church triumphant; one must pass through death to attain the realms of heaven, hence the cross surmounts it, for rood or rod mean the same, and so the rood is placed there to remind us that though we pass through the Valley of the Shadow of Death we will fear no evil, "Thy rod and thy staff shall comfort us." Over the chancel arch is painted very often the doom or judgment, the whole arrangement of arch and screen recalling this to our minds forcibly. In ancient screens, the principal colours still to be traced are crimson, white, and gold—gold for those who have attained their heavenly reward, white and crimson for those who have passed the Red Sea of trouble and affliction, and washed their robes white through much tribulation. The doors open inwards into the chancel, never into the nave; we can go to them, they cannot return to us.

The floor of the chancel is generally raised two or more steps above the nave, because of the honour to the clergy, as ministers to us in holy things; but the chancel roof is lower than the nave to remind them that are exalted that they must humble themselves. Special symbolical reasons are given for the stalls being fixed, while the seats in the nave were often moveable; the eternal rest of heaven is figured thereby.

As to the symbolism of the weathercock, Durandus says: "The cock at the summit of the church is a type of preachers, for the cock, ever watchful—even in the depth of night—giveth notice how the hours pass, wakeneth the sleepers, predicteth the approach of day; but first exciteth himself to crow by striking his sides with his wings. There is a mystery conveyed in each of these particulars—the night is the world, the sleepers the children of this world, who are asleep in their sins. The cock is the preacher, who preacheth boldly and exciteth the sleepers to cast away the works of darkness, exclaiming: 'Woe to them that sleep! Awake, thou that sleepest!' And they foretell the approach of day when they speak of the judgment and the glory that shall be revealed, and, like prudent messengers, before they teach others, arouse themselves from their sleep of sin by mortifying their bodies. And, as the weathercock faceth the winds, they turn themselves boldly, and meet the rebellious by threats and arguments; the rod on which it turns is the discourse of the preacher."

A discussion ensued, in which Messrs. Blashill, Boyes, Day, Ridge, Quilter, and others took part; and, the usual vote of thanks having been tendered to Mr. Birch, the proceedings terminated.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

DR. G. G. ZERFFI delivered the thirty-first lecture of this course on Tuesday afternoon last, at the South Kensington Museum. Continuing his remarks on the subject of Mahometan ornamentation, he said that the ornamental art of the Mahometans was everywhere characterised by a wild confusion of motives, and in it there was nowhere to be found a feeling of conscious individuality. There was no harmony, for instance, between the supporting and supported parts of a vaulted chamber. The walls were covered with an abundance of charming forms, continually reminding the beholder of the splendid tapestry of the East. He could not better compare oriental art than with oriental love; as in the latter was witnessed the utter abandonment of every other feeling but those of adulation towards the person loved, so in oriental art all order and regulated symmetry were discarded. It was this passion, this enthusiasm in ornamentation, which had produced those perfect marvels which we now admired in Mahometan art. A distinguishing feature of Mahometan art was its arabesque and perforated screen-work. Referring to the perforated arabesque-like windows to be seen in the Indian temples erected under Mahometan influence at Ahmedabad and elsewhere, the lecturer said that if they were carefully looked at it would be seen that they resembled veils of textile fabrics—for the art of the Mahometans, like that of all nomadic tribes, took its first motives from its textile fabrics. Vegetable life impressed them most, because they were forbidden to copy or represent animal life, and they soon greatly excelled in producing their admirable creeping-plant-like arabesques. Their success in this respect was owing to their observance of the laws of symmetry and eurithmy. The patterns in these windows were greatly varied and diversified, so much so that even in the smallest windows exactly the same patterns rarely occurred twice. Their architecture, like that of all other peoples, was deeply influenced by their religion. Their sanctuaries, whether in Ahmedabad, Delhi, Cairo, or Lucknow, always occupied the centre of a kind of court-yard, round which were ranged the buildings or offices accessory to their religious observances, such as the fountain, &c. Ahmedabad, Delhi, and Lucknow afforded numerous examples of Mahometan art, photographs and drawings of which were on the screen. Ahmedabad was a town in the Bombay Presidency, with about 130,000 inhabitants, and about seven English miles in circumference. The name Ahmedabad, meant "the town of the praised one." The mosque itself was generally the centre of the buildings, and was built of white marble and darkish red bricks. The whole of the ornamentation was executed in white marble, while the walls themselves were a kind of mosaic in reddish brick and white marble. The effect of this was much more splendid and beautiful than that of the walls of the Doge's Palace at Venice, which had enchanted Mr. Ruskin so much. Referring to the perforated windows which so abounded in Ahmedabad, the lecturer said that while the ornamentation was over-done, the geometrical and creeping-plant-like forms were well worthy of study by the art student, but such motives should not be slavishly copied; the best features in them should be picked out, modified, and used up. The student should study these works and imbibe their forms, improving them in accordance with the greater taste and better-regulated artistic feeling which prevailed in the present day. It was always fatal to copy them, because they always had one great fault—viz., over-ornamentation. Referring to the horse-shoe arch, so widely used in Mahometan buildings of a certain period, Dr. Zerffi said he could not agree with those who admired that form of arch, for it gave one the impression that it was constructively weak, and might come down with a run at any time; and wherever the appearance of a structure, such as a vault, was terrifying to the beholder, the architecture was at fault. This form of arch arose out of nothing but a mere straining after novelty—a sure sign of degeneracy in art, for mere novelty was not originality; consequently in all the temples erected in the best periods of Mahometan art the only forms of arch used were the round and the pointed. Remarking on the richness of ornamentation in some of the Mahometan mosques, the marble and stone-work inlaid with ivory, mother-o'-pearl, and precious stones, the lecturer said it far surpassed even the glowing descriptions of the Arabian Nights, and was an exemplification of the proverb "Truth is stranger than fiction." The minars, or minarets, were incidentally alluded to, the lecturer observing that one at Delhi, the Kootub Minar, was 265ft. high, and 62ft. in diameter at the base. In appearance it resembled a number of poles or stalks tapering towards the top, and tied together at intervals by bands, on which were inscriptions in the Arabic language from the Koran. This mode of construction was undoubtedly of wood in its origin, but the minar in question was of polished red sandstone, often called red marble. This minar had been greatly damaged by lightning and by an earthquake, but the Government had very wisely spent a considerable sum of money in its conservation. Inscriptions from the Koran, similar to those on the bands referred to, were very commonly used as decorative motives, and by constant repetitions and intertwinings were made to form arabesques. At a time when we in England were perfectly indifferent as to progress in science or art—at the time of the Crusades—at a time when we were only striving to gain for ourselves a social existence, this Indian art was at its height. After referring to the textile fabrics and to the dresses worn by the early Mahometans, and to their tapestry, the lecturer described their weapons and the trappings of their horses. Their furniture was simple, and the greatest possible attention was given to the ornamentation of all that was portable, transferring upon that which was not portable an excessive ornamentation. Their nomadic origin was clearly traceable, from the fact that as far as possible every article of furniture was portable; this might be owing, also, in a great measure to their belief that they had no certain abiding place on this earth. All their drinking vessels were richly ornamented with filagree work, and with sentences from the Koran. Within easy reach of them, as they sat on the floor, and in every available corner, were little cupboards or cabinets, richly ornamented externally and internally in a kind of Byzantine Moresque style. Their jewellery, too, was excellent as to workmanship. The influence of religion on art was there, as everywhere else, made manifest. Their religion was devoid of that real vitality which produced progress, because it was based on hatred instead of being founded on love. Their art had remained stationary, and would do so, on account of the fatalistic beliefs of the people; and notwithstanding that they knew better how to decorate a flat surface than any other people, they were fast being left in the rear in the march of civilisation.

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THE WELLINGTON MONUMENT.

EITHER Mr. Ayrton has been overruled, or he has chosen to rescind his dismissal of Mr. Stevens for some reason best known to himself. We are not going into the facts of the case again—everybody is sick and tired of it; but we should like the question asked of the First Commissioner, "Why Mr. Stevens was virtually dismissed in November last, and why he is to be allowed to resume the execution of the monument almost on his own conditions, and at the cost of the nation?" Mr. Stevens' "unpunctuality"—failure and breach of contract, a private patron would, we think, have called it—is to be guarded against by the general superintendence and "pecuniary responsibility" of Mr. Coleman. Much in the same way, we presume, as it was guarded against by the employment of Mr. Penrose, who we are really surprised to find is not reinstated. Let us, however, be thankful. In two years and a half—*if* Mr. Stevens keeps his word—we shall have, at a cost of £22,000, after waiting fifteen years for it, what we ought to have had in five years for £14,000.

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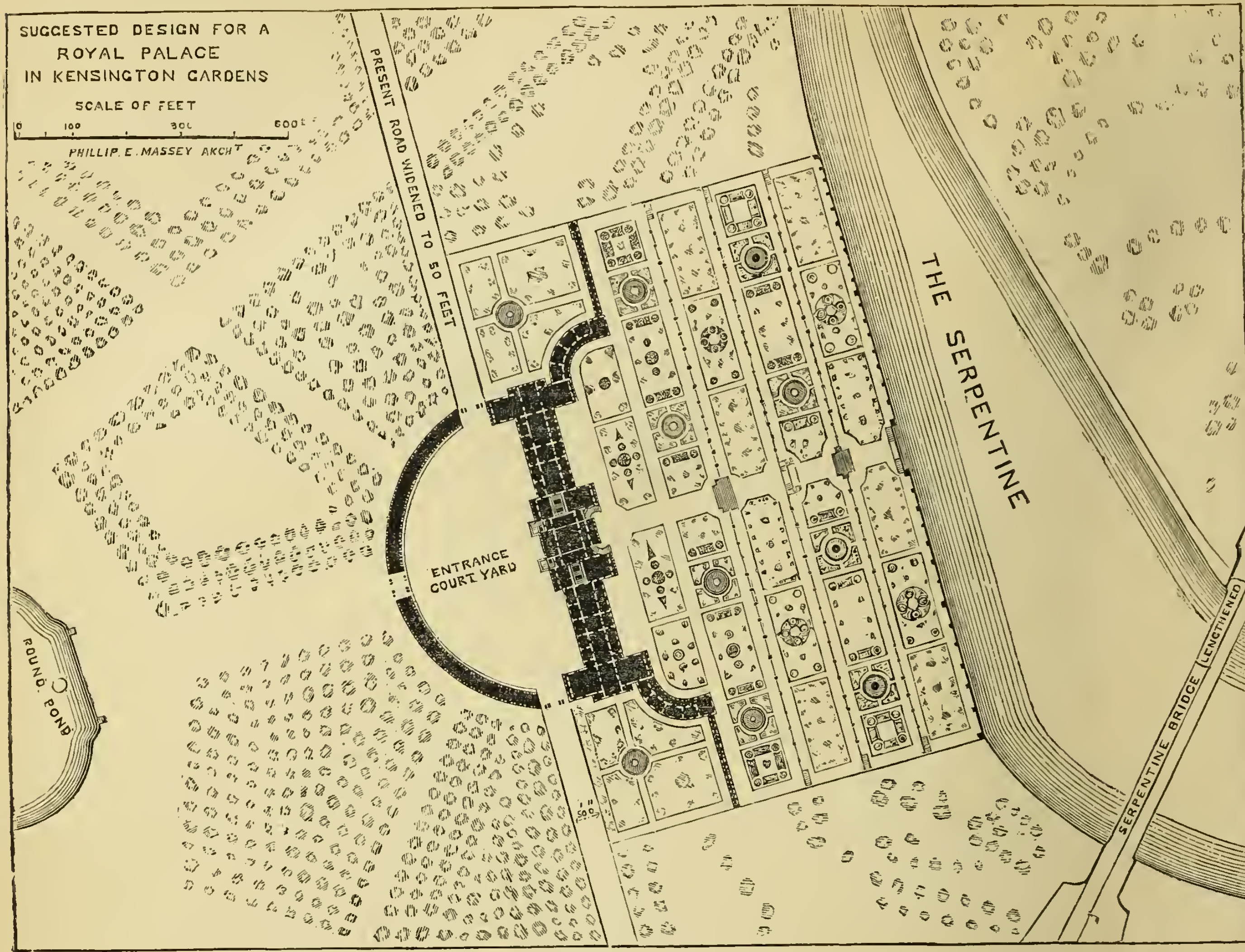
WHO EARNS THE TAXES?—An influential manufacturer at Bolton (Mr. T. Thomasson), in a letter in the *Bolton Guardian*, remarks:—"The actual workers of the kingdom work every day of the year to pay the interest of the national debt, twenty-six minutes; for the maintenance of our armaments, twenty-eight minutes a day; for the cost of collecting the taxes, five minutes a day; for the relief of the poor, nine minutes a day; for local taxes, nine minutes a day; for the cost of civil government, twelve minutes a day. Adding these together, we find our labourers working every day of the year one hour and twenty-nine minutes for the payment of our national and local taxes. Very nearly two-thirds of this time is occupied in producing the cost of our war system, that is, of our national debt and our armaments.


SUGGESTED DESIGN FOR A ROYAL PALACE IN KENSINGTON GARDENS
SCALE OF FEET
0
100
300
600
PHILLIP. E. MASSEY ARCHT
PRESENT ROAD WIDENED TO 50 FEET
THE SERPENTINE
ENTRANCE COURT YARD
ROUND POND
SERPENTINE BRIDGE LENGTHENED

DESIGN FOR A NEW ROYAL PALACE IN KENSINGTON GARDENS.

The insufficiency of the accommodation afforded by the Royal Palaces in London has been long acknowledged and frequently commented upon. The State apartments in St. James's are, as is well known, quite unequal in size, convenience, and every other requisite quality for the requirements of the Court. In truth, the place, originally but a hospital, ugly and mean-looking as it is, without any special historical interest, had better be razed as soon as fitting accommodation is elsewhere obtained. Nor is there, it seems, without unduly encroaching on the domestic privacy of the Sovereign, room in Buckingham Palace. We especially have no place in which we can lodge and give fitting hospitable entertainment to foreign royal visitors. In these respects this, the capital of the richest and greatest empire of the world, is much behind and inferior to other cities, and the want is disgraceful. To supply the deficiencies pointed out, I propose a New Palace be erected in Kensington-gardens. This is not altogether a new idea; the suggestion has been previously made, but based on the supposed necessity of destroying the present Palace for the sake of the site, and so has obtained no favour. I would preserve the existing building; independently of other associations, it is interesting as the birthplace and long time the residence of her Majesty the Queen. But, as the gardens afford what is incomparably the finest site in London available for the purpose, I should propose erecting the New Palace on the slope between the so-called Round-pond and the Serpentine river. The space is a comparatively open one, and the existing road across the gardens from north to south would, widened, serve well for the ordinary means of approach. The ground between the Palace and the river I would bank into terraces, with appropriate architectural enrichments, forming a frame and fitting foreground to the building. The terraces would be laid out as gardens, with turf, flower-beds, walks, fountains, sculpture, &c., with flights of steps between the diverse levels and at the lowest giving access to the Serpentine. This lowest terrace would have small pavilions in which ladies might sit and watch the boating, &c. The river at this part I should propose to widen, and instead of the present nondescript termination at the northern end I should substitute, as a mask, a handsome bridge, with statues and covered way, affording what is now wanted—protection from the weather to the storm-bound public. The existing bridge would require to be lengthened, and, with increased size and importance, would become proportionately more striking and ornamental. I would propose that one-half the Palace be used for levees, drawing-rooms, &c., and the other be reserved for the accommodation of Royal visitors. The whole to be as freely as possible open to the inspection of the public.

A perspective view of my design is in the present International Exhibition. A plan of the same is here appended. The style adopted is that practised by Mansard and other architects of the Renaissance, and with the characteristic high roofs they so wisely adopted from the Gothic. At one end of the upper terrace is shown a prospect tower, to be used, also, for supplying, from an artesian well, the water for the interior uses of the Palace, and the numerous fountains in the gardens. The overflow of the latter would be received by the Serpentine, and do much to improve it. The Round-pond I should decorate with pavilions and statuary on its margin, and a grand multiform arrangement of fountains in the centre. The necessary forcing-houses, stables, &c., would be provided near the present Palace. On the site of St. James's Palace I should like to see built a proper residence for the Prince of Wales, Marlborough House being utterly unworthy his dignity, the building set well back from Pall Mall, with court-yard and screen of columns in front. Possibly these improvements will be effected some time, but the Anglo-Saxon mind is averse to change, and slow to move. If the money so lavishly spent in one year only on our arms and armaments in the foolish international game of brag was expended on the arts of peace, what wonders might be accomplished! Philip E. Masey.

ERECTION OF INFECTIOUS WARDS.

At the last meeting of the Northwich Board of Guardians the deputy clerk said that on the last Board-day the Visiting Committee were directed to make a report on the building of infectious wards at the workhouse, as recommended by the Poor Law Board. They had accordingly met and agreed in proposing that it should be a two-story building. Since then, however, Mr. Cheshire had received a letter from the architects (Messrs. Redford and Davenport, of Manchester and Winsford) in which they said, "On going carefully into the matter of the infectious wards of the Northwich Union Workhouse, we find the instructions of the Poor Law Board, both in their printed instructions with reference to such buildings, and also in their letter addressed to yourself, so precise as to the necessity of a building such as is proposed to be erected being only one story, that we deem it right to mention that we think there will be danger of the Board rejecting plans of a two-story building. Their instructions are certainly express that this class of buildings shall be only one-story, the reason of which probably being that the vitiated air from the lower rooms would in all likelihood be dispersed into the upper rooms, and so spread disease." The committee had again met that morning, and he believed they had altered their decision. Mr. Lea, chairman of the Visiting Committee, said that after reconsidering the matter they had decided to recommend that the Board should adopt the views expressed by the Poor Law Board, and have the building one story high.

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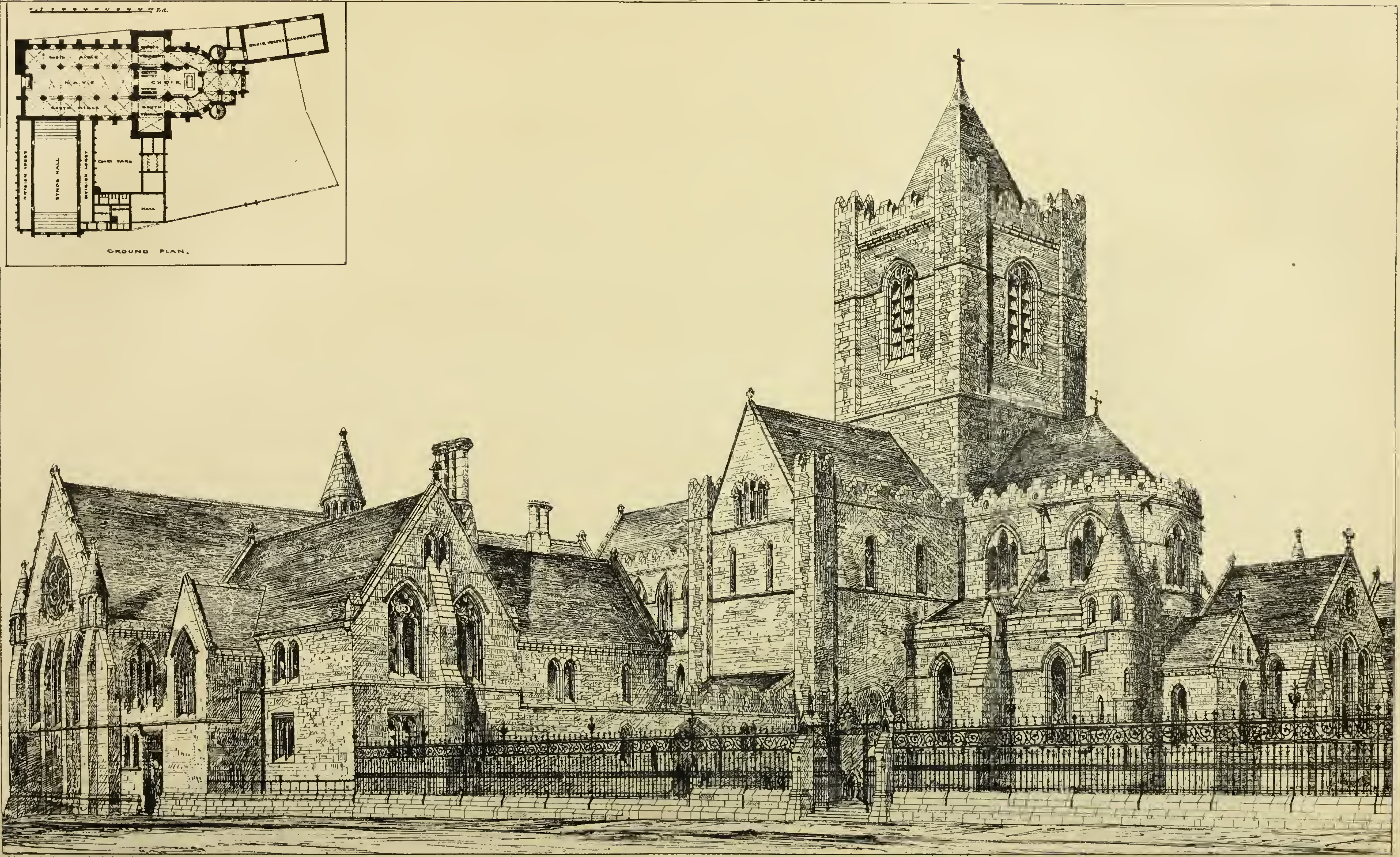
The Population of London.—The population of London enumerated as living at midnight on Sunday, April 2, was 3,251,904, an increase of 447,815 in ten years. The houses occupied by this enormous mass of people stretch along the banks of the Thames from Woolwich up to Hammersmith, and across its stream from Norwood to Hampstead, over 122 square miles. On an average there are 2,669 persons to a square mile.

Supplement to the Building News May 26th 1871.



GROUND PLAN.

Photo-Lithographed by Whiteman & Bass London

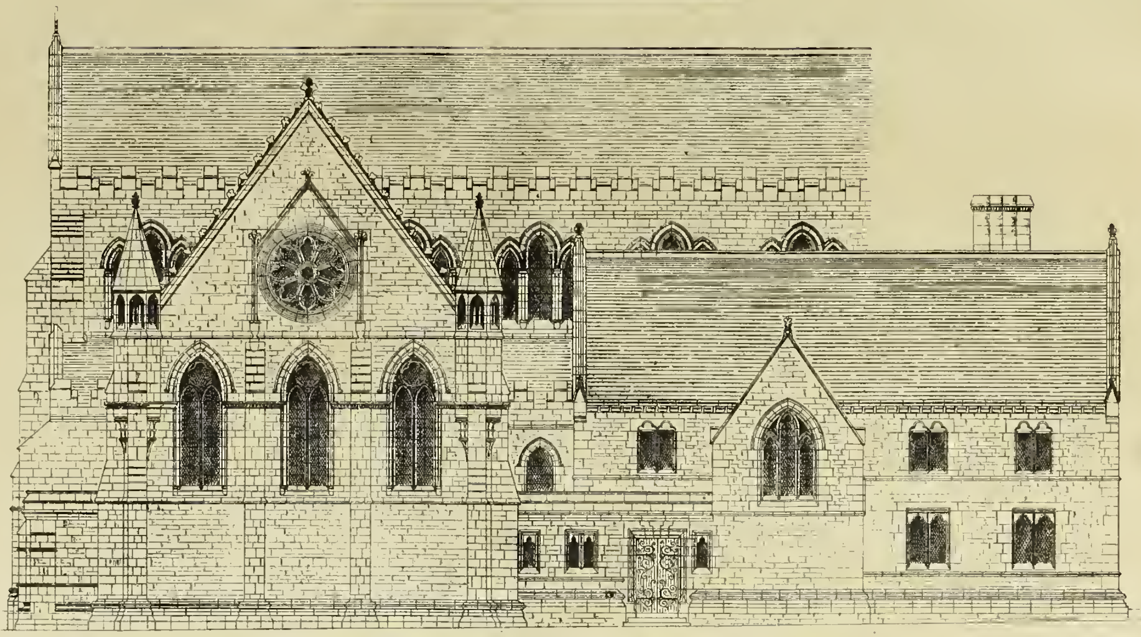
DESIGN FOR RESTORATION OF CATHEDRAL, AND FOR SYNOD HOUSE, CHRIST CHURCH, DUBLIN.

George Edmund Street, A.R.A. Architect

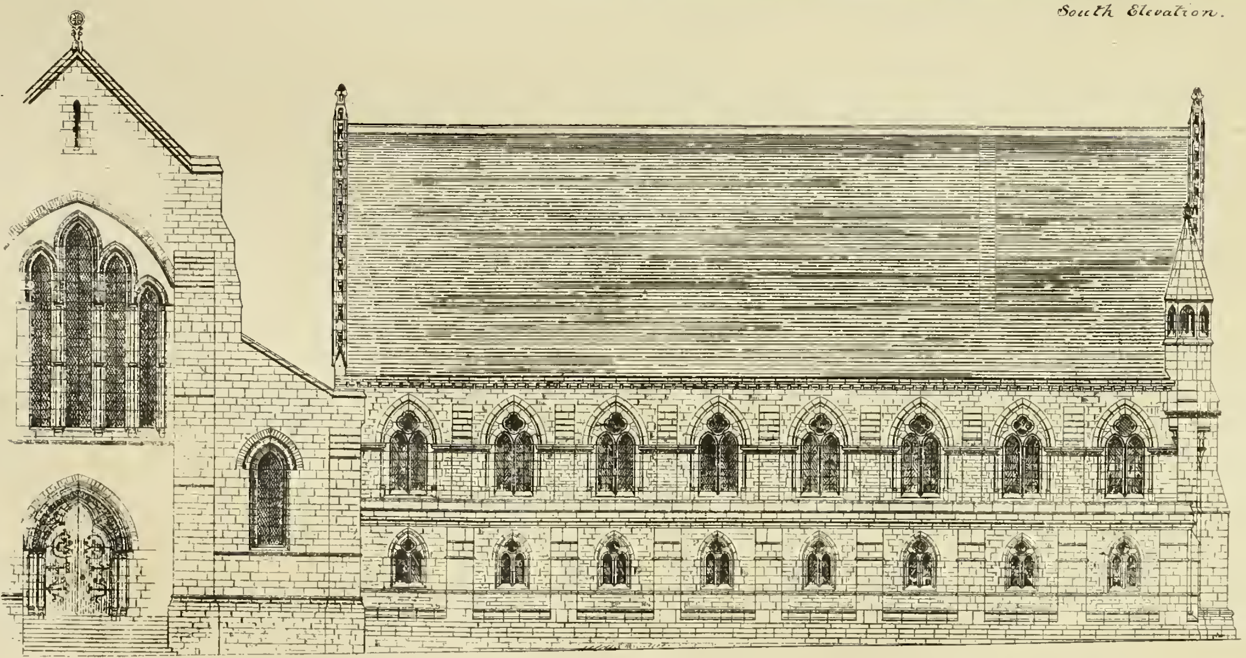
SUPPLEMENT TO THE BUILDING NEWS MAY 26th 1871.

Christ Church Cathedral, Dublin.

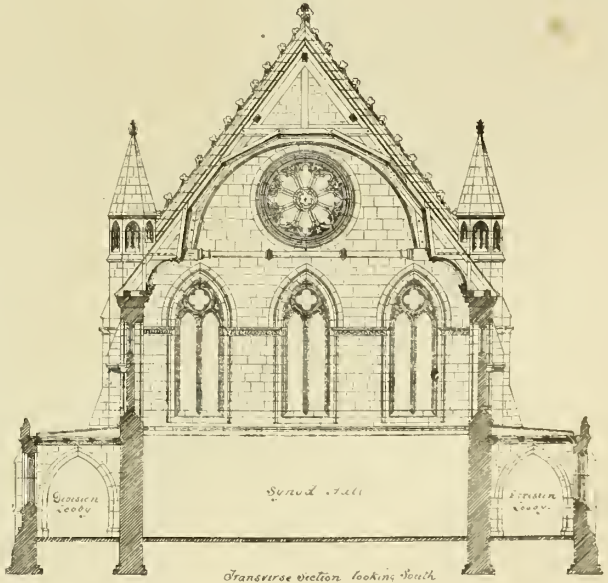
DESIGN FOR SYNOD HOUSE.



South Elevation.



West Elevation.



Transverse section looking South

Photo-Lithographed by Whiteman & Bass London

THE ARCHITECTS' CONFERENCE AND THE PRESS.

FOR some time past it is well known that there have been many questions which required discussion and revision in connection with architectural practice in this country. "Unsettled questions," says a Swiss statesman, "have no pity for the repose of nations." The aphorism may be applied to corporations or organised bodies of men, and particularly to British architects; and as other societies have their periodic conferences, it was only natural that the architects should follow suit, and some of them have been doing so in London this week. As questions affecting the whole body of architects were to be discussed at the Conference, it was also natural that the profession throughout the country would like to know what was said and done. We accordingly made arrangements to give as full a report of the proceedings as our space would permit, but to our astonishment we found that no reporters were admitted. We do not dispute the right of any body of men to determine to sit in secret; and there are times when secrecy is advisable. There are, however, other times when it would be the height of unwisdom to do so, and such a time has occurred at Conduit-street this week. We do not know who is responsible for the error—we only know it has been committed. A similar mistake was made by the Institute a few years since, but it gave rise to so much dissatisfaction that the decision was soon either repealed or disregarded. The Institute is a privileged body, and no one can question its right to exclude reporters from its general meeting. The right of doing so, and the wisdom of doing so, however, are two very different things. But we question the right of the committee of the Conference, or whoever may, in this instance, be responsible, to decide on such a question without consulting the Conference itself. The Conference consisted, not only of members of the Institute, but of representatives from the other architectural societies in the country, and the members of these societies would very naturally like to know what was said and done in their names, what laws affecting their interests were passed, and the reasons urged for such laws. There was scarcely one out of every fifty architects of the country present at the Conference in London this week; and how can it be expected that the whole body will be satisfied with regulations discussed in secret? Matters in some respects are pretty much at sixes and sevens at present, and nothing is more likely to excite a dissentient spirit, and lead to confusion worse confounded, than the assumption, or even the appearance of dictation on the part of any governing body. No doubt, when the matter is inquired into, it will be found to be the work of some officious clique; but by whomsoever arranged it will lead to disappointment and disaffection. What could have been deliberated upon at the Conference to justify the exclusion of the reporters? Did Professor Kerr, "On Competitions," prefer to speak to three or four scores, or to a hundred times that number, as he would have done if reporters were present? And what was there in Professor Lewis's paper on "Architectural Education" to justify its being read with closed doors. One would have thought that the more the architectural students throughout the British empire knew about education appertaining to their own profession the better for all. Not so, however, thought the committee of management, for they have done what they could to limit the number of the worthy professor's listeners. We say advisedly that the BUILDING NEWS is read every week by more hundreds than there were units at the Conference, and much which was good uttered at the Conference, inasmuch as it professed to speak (in some matters at all events) in the name of the profession—was deserving of the widest publicity. We say nothing of the *Builder*, with its vast constituency of readers, as that publication is well able to take care of itself. We, however, do not now speak in behalf of journalism, but in the interests of architecture in all its connections. Why, for instance, should Mr. Seddon be compelled to confine what he had to say "On the Principles of Chromatic Decoration" to a select few? Or why should Mr. Popplewell Pullan, who is well able to speak with authority on "Classic Art," be compelled to hide his light under a bushel, when it might be put on a candlestick? The same might be said of Mr. C. Rolfe, who spoke "On the Effect of Ecclesiastical Law on the Arrangement and Decoration of Churches," or of Mr. E. Sharpe, who treated "The Exclusion of Perspective Views from Professional Competitions." What applies to architecture as a fine art apples with equal force to the science of construction. Again, we ask, what spirit of Freemasonry or Great Mogulism pervaded Mr. Fowler's paper on "Fire-resisting Material and Construction, with Reference to the New Building Act," or Mr. C. Barry's memoranda on "The Strength of Certain New Building Materials as Tested by Experiment," or of Mr. Wonnacott's paper on "The Use of Concrete as a Substitute for Stone in Building?" And, to come to the last and not least, what was there is Mr. I'Anson's paper on "Professional Charges"—a question of vast importance at the present time—that it should be read and discussed in the forced absence of the reporters, at something like a hole-and-corner meeting? The more the matter is investigated, the more its absurdity becomes manifest. We say that a great injustice has been done, in the first place, to the readers of the papers themselves. We know that several of them, at all events, would have preferred to give the whole profession the benefit of their thoughts and experience. A man who takes the trouble to write an elaborate paper would much rather speak to a thousand persons than to ten persons. In fact, men who have anything to say worth saying like to be reported. But we protest against this policy of exclusion for the sake of, and in the name of, the whole architectural body. A majority of the architects of the country do not belong to any architectural society whatever; they are, however, expected to be governed in their professional practice by the same regulations as those who are members of such societies, and it is right and proper that they should know what is said and done in matters of general interest. But it must not be supposed that the members of the London or provincial architectural societies would for a moment sanction such a suicidal policy as has been pursued in London this week. The Council of the Institute, as we have said, attempted it and failed. The Architectural Association, a vigorous and growing body, has always welcomed the presence of reporters at their meetings; in fact, most of its prosperity is traceable to the publicity thus attained. The same may be said of all our large scientific associations. What would the world think of the British Association, or the Social Science Associatson, or the Institution of Mechanical Engineers, or the Institute of Naval Architects, if they excluded reporters from their annual meetings? How infinitely absurd it would appear if the British Archæological Association or the Royal Archæological Institute passed a law saying that in future their annual gathering would be conducted within closed doors! Why, the world would laugh at them. But a Conference of Architects called together under the auspices of the Institute, in the plenitude of its wisdom, and its affectation of mystery, tramples ordinary regulations under feet, and resolves that what is said or done shall be said or done in secret, and no more of the proceedings shall be published than they, in their generosity, will permit. We beg pardon: the Conference has not done so. The Conference was never consulted in the matter. The decision was arrived at before the Conference met, and so an injustice was done to the Conference itself, and a still greater injustice to the mass of provincial architects who could not listen to the proceedings, but who would like to know what was proposed, discussed, and concluded in their name. In another page will be found a slight sketch of a portion of the proceedings, written by a member of the Conference, who loves light rather than darkness. We may venture to promise that the erroneous policy commenced this year will not be continued.

STAINED GLASS AT THE INTERNATIONAL EXHIBITION.

IN this exhibition of stained glass, which is neither a large nor very satisfactory one, there are some careful works wrought out upon generally correct principles, which deserve patient attention. The best of these are to be found in the Meyrick Gallery. Under the name of the firm Heaton, Butler, & Bayne is exhibited a work of great excellence, and we wish we knew whether we had to credit any member of that firm, or an artist employed by them, for the design. The omission of this essential information is a grave want throughout this exhibition. A band of figure subjects is carried through the middle of six lancet lights, which are grouped into three windows of two lights each, with traceried heads of geometrical character. The subjects represented in the panels forming this band are taken from Tennyson's "Idylls." The drawing throughout is admirable and delicate, but the first impression received is that the pictures (exquisite pictures they are) are miserably injured by the extraordinary black lines formed by the lead work which meander through them, and spoil them as works of art. The truth is, that this character of work is utterly unsuited to be executed upon glass, except it be, as Mr. W. B. Scott boldly does his work, upon single large sheets of glass uninjured by any divisions. There is another fundamental error in these works—namely, that they are in perspective, showing landscape distances, rapid foreshortening of figures, &c. Again, the colour, delicate as it is, is hardly satisfactory, as the sky-blue knights and golden-haired damsels, with the light shining through, are ghostly and unreal. It is, therefore, with unfeigned regret that we turn from these beautifully-executed, but mistaken drawings, and we venture to express a hope that we may see them translated into some other more appropriate material. They would form charming designs for painting upon slabs of porcelain. To show that we have taken a correct view of them as now presented to us, we would point, for example, to the Lovers Launcelot and Guinevère, in the fifth panel. The upper half of the languishing fair one looks as if enclosed in a mis-shapen black bottle, and suspended by some uncanny contrivance from Launcelot's back—the bottle and machine being composed of the lead lines referred to.

Mr. W. B. Scott's (No. 2402) three windows for the "Keramic" Gallery, South Kensington Museum, are the last of the series designed by that able artist as illustrations of the history of earthenware of all nations. Here, again, we seem to be looking through lithographs held up to the light, and are more amused than edified by diaphanous wide-awakes and other unnaturally luminous objects of every-day life. The drawings are well composed and interesting, but somewhat rotten in the lines. It is, however, as decorations to glass that they are so utterly wrong—we may even say ludicrous. Each panel is surrounded by a narrow border of intertwined ribbons and foliage stained yellow; the panels themselves resemble etchings. We now turn to the work by the well-known and highly-esteemed firm of true artists, Messrs. Morris, Marshall, & Co., who have only sent three small panels (2383). The first represents Queen Dido and Cleopatra, from Chaucer's "Legend of Good Women." Now, in these the treatment is much more suitable to glass; the figures are in one plane, and not foreshortened, and the amount of shadow is restrained. In the faces there is none whatever, and the shape and features are only expressed by hardly a dozen lines, leaving the well-chosen tint of the glass to stand without modelling. The breadth of the flesh is contrasted and thrown out by multitudinous lines in the hair, in the luxuriance of which, of course, they have revelled to an extravagant degree. The draperies are gold, white, and ruby, the gold harmonising with the hair and crowns; the ruby deep and rich, but perhaps too strong as a contrast with the rest, and looking spotty at a distance. The next panel represents a most woe-begone God of Love, with Alceste, illustrative of the same legend. This is the most comic Cupid we ever saw, and Alceste seems very dubious—as we should have been—as to putting herself under his guidance. The god has a sort of night-dress or smock nearly to his feet, and holds his darts very much as if he were ashamed of them, and his *blasé* appearance is heightened by the ruby spots around him, which we find to be his wings and robe. The green dress of Alceste is very beautiful, and her figure altogether charming. A quiet background of brown palings and delicate herbage, and weeds in front, is good, and though the distance is complicated and in perspective, it is not obtrusive. Their third contribution is Chaucer asleep, in a olive-green dress, with one patch of yellow lining seen as a sleeve. The figure here, very fine in itself, is too strong in colour for the rest of the picture, and a mere patch of colour at a distance, and we must own that we find little harmony in these three compositions as pictures, but they are nevertheless full of beautiful passages, and are thoughtful works of art, for which we are very thankful. Above Messrs. Morris's two panels is a two-light transomed window, No. 2390, by T. G. Jackson—"The Seasons." This is a meritorious work, with on the whole a good effect. The figure panels are very small, and set in the middle of diapered work, but though they lack the defects of the examples we have named, they want also many of their merits, and do not rise to a high level as works of art. This work, though properly attributed to the artist who designed it, is exhibited by James Powell and Sons, and is a pleasing example for domestic decorative work. Above the figure of Chaucer by Messrs. Morris is a single light window the authorship of which we cannot ascertain from the catalogue. The subject is a mother bringing two children to Christ. There is much decorative merit in this, but the woman cannot be said to possess a figure at all. The robe which is supposed to cover it is covered with a beautiful diaper; the flesh is perhaps too white, and the outer cloak of too strong a yellow. The background of laurels is very exquisite. The conventional work which completes the top and bottom of the window is not much in character, and is rather commonplace. There is, however, in this work so much that is beautiful and meritorious that it deserves attention. No. 2374, "S. Michael," by D. Morgan, is rich in colour, and the background in particular is well treated; the figure itself is not first-rate, and the armour too much painted up. Another powerful and decorative window, as far as colour is concerned, and executed upon quite right principles, is 2377, by Gibbs and Moore. It represents a youthful king seated on a throne. The head and crown are the weakest portions, and the diaper at the back of the figure is too obtrusive. No. 2371, "S. Cecily," by F. V. Hart, is one of the best works in the Meyrick Gallery. The background is rather loud and startling, but is composed of glass of very fine quality both as to tint and texture. The figure is well drawn and beautifully draped. The left arm, however, which is foreshortened, does not seem right to us. The expression of the head is very good. A little work by Burlison & Grylls, immediately above the last example described, represents the Annunciation, and though overpowered by uninteresting tabernacle work, is an excellent copy of old German work. We should think these artists capable of more than such copies. For the other designs in this gallery we have little or nothing we can say in praise; they are mostly exemplications of the worst character of modern glass painting, and only should be looked at as warnings of what to avoid. Either they present loud, violent, and discordant colouring, or deep shadows and perspective drawing, which renders them utterly wrong in the first principles of this special art. It is only with the hope of gleaming from them some salutary lessons that we shall refer to any. It is quite sad that human patience and high ability of a certain class should be wasted upon abortive productions like those exhibited by Messrs. Mayer & Co., of Munich, and Holles-street, Cavendish-square. It is sadder still for us English that sufficient encouragement is given to such parodies of art works as to induce the firm to become domiciled amongst us. Take, for instance, such a preposterous transparency as that of No. 2379, representing Hamlet's soliloquy with the gravedigger. There the translucent hero, of rakish aspects, seems to have a lime-light behind his aldermanic corporation. He holds out theatrically what looks like an ostrich's egg, but is a highly-polished skull, which has been gracefully handed to him by the sentimental grave-digger, who, with up-raised eyes and out-puffed cheeks, pomatumed gray locks, and bran-new clothes of varied and brilliant tints, is standing in a rocky hole, upon the crystalline sides of which his spade could not possibly make any impression. A brigand-like attendant in the background, with hat and that graceful feature, waxed moustaches, and scornful expression, is wonderingly listening to the philosophical remarks of his master. The dress of this elegant ruffian consists of a ruby-coloured cloak, lined with lavender and edged with gold, a mauve and gold-bordered vest and cerulean unmentionables, the lustre of which is only outshone by the gleam of Hamlet's ultramarine scabbard, and relieved by the delicate pinkish gray tombstone, against which he is negligently reclining, and around which emerald grass is ranged in ordered tufts, apparently kept clipped by the court hairdresser. The crowning absurdity of this ludicrous picture is that the shadow of Hamlet's legs—one of which, by the way, is puce and the other purple—is thrown like across the picture, and is necessarily opaque, while the lights are transparent—a reversing of Nature's laws which it would require more than his affected philosophy to help us to endure. In the adjoining work by the same firm, our Saviour, with brown face but pink hands, with a gold and crimson nimbus, scarlet cloak with pea-green lining, and mauve robe, is talking to a most lackadaisical Samaritan woman, whom none would have credited with the experience of life of her Scripture prototype. The scene is represented under a canopy of palm trees of the most vivid green leaves and ruby fruit, but the whole overshadowed by a Gothic arch and pediment of construction and hues which would beggar any description. Only second to these in absurdity may be ranked an adjoining picture of our Lord receiving the children brought to him, by Lavers & Barraud. Although there is drawing of good character in some of the draperies in parts, some of the children have wigs of veritable gold, and our Saviour a robe of startling red and blue; but the comic element in the composition is that the light is streaming through the whole group of figures, in spite of gloomy rocks behind. But of all the marvellous toggery with which the human imagination has draped even supernatural beings, that in which Mr. H. Hughes has arrayed the angel of the Revelations, in No. 2387, is, perhaps, the most marvellous. It puts almost to shame the dragon, which, clad in scales varying in hue from the deepest ruby to the lightest mauve, and crowned with gold and winged with green, is pouring from luminous jaws a pearl-gray foaming flood. But perhaps even more objectionable than this ridiculous colouring is the vapid character of what stands for drawing in another contribution by the same firm (Ward & Hughes). That such simpering virgins and idiotic angels should be tolerated for a moment is a reflection otherwise than creditable to the present age. But there are degrees in degradation as in other things, and a still lower depth has been reached by Messrs. Holland & Sons, who proclaim themselves "artists in stained glass." Joseph, in a robe of many colours, which gives fine scope for extravagance, is pointing to an orrery in an azure sky, for the edification of a set of creatures without form or anatomy, arrayed in the most comically discordant garbs imagination can conceive; and the sale of Joseph to the Ishmaelites, which completes the series, is the bathos, we should think, to which such work could be brought. We have, however, thought this so often that we have become accustomed to disappointment, and accordingly, coming to the last work in this gallery, we find it possible to attain even a lower depth than the last, and we should certainly adjudge the palm for the present for the very worst work that could be conceived to 2397, specimens in the Renaissance style in three parts, by Vander Poosten, jun. This is because the figures are larger and more obtrusive, and the colours more atrocious. Feeling that our eyesight would not much longer suffer such outrages as the sham Malachite and ultramarine panels a foot high in the pedestals on which the emblematical figures stand, and feeling it beyond our powers of description to give any idea of the figures themselves, we hasten from the gallery, and leave to a future occasion any consideration of the stained-glass in other parts of the Exhibition. "Sufficient for the day is the evil thereof."

J. P. S.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of the General Conference of Architects was held on Monday afternoon last at two o'clock, when the President, Mr. T. H. Wyatt, delivered an address touching on the various subjects announced for consideration, especially on that of professional practice, under which head were discussed the question of percentage in the commission of architects, the scale of remuneration adopted in Germany and America as compared with that in England, and also the employment of "quantity surveyors." On these points there was considerable discussion. At the evening meeting,

Mr. F. C. Penrose, M.A., architect to the Dean and Chapter of S. Paul's Cathedral, read a paper

ON THE DECORATION OF S. PAUL'S.

Mr. Penrose observed that it was necessary to begin by asking whether the Cathedral should be decorated at all, since the point had recently been raised by an eminent architect (Mr. Street). Some colour had already been introduced; but in the decoration of a cathedral a little colour was a dangerous thing, and until much more had been done in this direction in S. Paul's the effect must necessarily be unsatisfactory. It was Sir Christopher Wren's intention that the dome should be painted in mosaic, that the roofs should be "painted if required," that a ciborium of "the finest Greek marbles" should be erected at the east end, and that the apse should be entirely coated with the same costly materials. For the dome and all concave surfaces Mr. Penrose advocated mosaics; but other kinds of painting, inlaid marbles, sculpture, &c., might be made use of throughout the Cathedral. A short description of the interior of S. Paul's decorated as he hoped it would one day be, would best enable his hearers to realise what was contemplated. Let the entrance be supposed to be at the west end, about to become the easiest access to the Cathedral. On passing through bronze doors richly charged with devices, a striking effect would be produced by the brilliant roof, covered with mosaic patterns, and rich with gold. The cupola immediately overhead, 40ft. in diameter, and the panels of the exquisite side chapels, would be pictorially treated in the same material. The walls relieved with marble slabs and marble inlaid; the pavement also and the windows, enriched with colour, must be so treated as to preserve a due regard for breadth of effect and the necessity in S. Paul's of a large amount of unobstructed sunlight. All panels should be filled with coloured marbles or sculpture, and no niche should be without its statue. The nave and transepts must, however, be in some respects subordinate to the choir. In the great dome, which had been called the very "essence of the building," the *grisaille* pictures of Sir James Thornhill could not fail ultimately to give place to Sir C. Wren's cherished wish for mosaic pictures. And, in addition to these, the drum and the eight spandrels (the latter already commenced in mosaic) would afford grand scope for the highest efforts of art and magnificence. The roof of the choir should be a splendid and impressive work in mosaic, surpassing the richness of the rest of the church. The windows in the apse would here also be more fully coloured; and the marbles, whether used structurally as replacing the stonework of the principal pilasters or in panels and inlaid patterns on the walls and pavement, would all be arranged so as to impart a fuller idea of sumptuousness. This must be especially the case with the ciborium and the choir screen already referred to. Up to the present time the committee had been chiefly occupied with the rearrangement of the stalls, organ, &c., but in the direction of the more general embellishment of the cathedral they had taken the step of inviting Mr. Burges to supply an iconographical scheme—that is, a selection of subjects to be pictorially treated in the different parts of the structure. This had been done, and although Mr. Burges was perfectly unfettered, his scheme differed only in fullness from that contemplated by Dean Milman and his committee. The same was also true of the style—namely, the Cinque-cento, which Mr. Burges recommended. These concurrent views, and the treatment of many Continental churches and cathedrals, satisfied Mr. Peurose that the beauty of the interior of S. Paul's would be greatly enhanced by decoration. There were two places where above all others a commencement should be made, and which should, he thought, be carried on *pari passu*. One was the apse, as the completion of the sacrarium, and the other the dome. The apse windows before many months would be filled with painted glass, and if the present ideas—identical, moreover, with Mr. Burges's iconography—should be carried out, a colossal figure of Our Lord, surrounded by angels, would adorn the vault of the tribune, the material being mosaic. As for the dome, a few more thousand pounds added to the present subscriptions would enable the committee to carry out Sir Christopher Wren's plan of a dome vying in rich ornamentation with that of S. Peter's at Rome, without being in the least copied from it. The subject most suited to the dome mosaics was, by consent of all, that of the heavenly Jerusalem. This idea was the centre of Mr. Burges's scheme, and of designs which the lecturer had himself previously prepared. Were the dome once finished, the rest would soon follow. With respect to the painted glass, only three more windows were now required to complete the apse, and these must be procured from the royal manufactory at Munich, which has supplied those already put up; but he did not consider it would be necessary to look to Munich for any more painted windows. The Munich glass-painting, admirable in drawing, fails in texture, which texture, in consequence of Mr. Winstone's discoveries, is so remarkably characteristic of English glass. The committee have now actually begun their work in the Cathedral, and the first step taken is to re-erect, as a screen to the north door, the columns of the old organ-screen and their entablature, bearing the well-known words, "*Lector, si monumentum requiris, circumspice.*"

DISCUSSION.

The **PRESIDENT** congratulated the meeting on having heard so lucid an explanation of the objects of the Committee for the completion of the metropolitan cathedral. He believed there were several visitors in the room whose remarks would be listened to with respect and interest.

The **DEAN** of **S. PAUL'S** said that Mr. Penrose's paper embodied his own views of what should be done so fully that he would rather give place to other speakers, who might be able to deal with the matter from a professional point of view.

Mr. **BERESFORD-HOPE**, M.P., said he had listened to the paper with peculiar pleasure, explaining as it did so scrupulously and so clearly the difficult problems which had to be solved by the Committee. He had been working for many years for the restoration of the Cathedral, and had been associated with the former Committee, with whose scheme the late Professor Cockerell was identified, aided by the manly genius of Sir Charles Barry. The present Committee welcomed Mr. Penrose as a worthy successor to Professor Cockerell, and as one who was untiring in his energy and devotion. It should be remembered, however, that the work required to be done was not merely the decoration of a hall; the building ought to be considered as a place of worship—in fact, as the greatest cathedral in the country built by the Reformed Church. The Committee were aware of their great responsibility, and felt that if they were to sacrifice use to art or art to use they would not be doing their duty. They aimed at the realisation of both. Most of them would remember the screen, and the grave simplicity and retirement of the choir. The screen had been cleared away, although not without regret, for they could not make the area of the cathedral available for the services of the church with the impediment interposed by the screen, magnificent specimen of Renaissance work as it was. A special Committee had been appointed to consider the position of the organ, and this Committee recommended that Wren's choir should be preserved. The screen would not be retained, and the organ, which faced east and west, would be re-adapted and divided into two parts, to be placed in the large solid openings which occurred near the door. The stalls would be continued, after Wren's arrangement, in the choir, and the choir-screen would be erected just east of the lantern. Mr. Street had dissented from this arrangement, but the Committee felt that it would be more consistent with the object of the cathedral to have unity of worship and unity of design, and not to have to deal with two sets of services as two different things. Wren's arrangement of the open screen would be adhered to, and the same altar would be available for the small or the large congregations. The largeness of the space allotted to the worshippers was not an insuperable obstacle, but formed an element, rather, in the grandeur of the design. Mr. Burges's able report had been in the hands of the Committee for several weeks, but had not yet been acted upon, because it was necessary first of all to decide as to the position of the stalls and the organ. With regard to the stained windows, they would be of Munich work, and to this the Committee had pledged themselves. These windows would, in themselves, be consummate works of art, and it was hoped that by the end of the year they would be completed, when the work of restoring the organ and choir would be taken in hand.

Mr. G. E. **STREET** said he had the same veneration for S. Paul's Cathedral that he had for the work of any deceased artist, and thought it should be preserved as much as possible in its old state. He had expressed his views (which had not yet been made public) rather strongly on the subject of the proposals of the Committee. Firstly, he had objected that the supposed intention of Wren to decorate the cathedral was not founded on sufficiently good evidence. The Committee had recommended the use of marble in the pilasters or in panels, and inlaid patterns of mosaic instead of stonework, but this, he contended, was a perversion of the original design, and therefore not a work of restoration. Further important alterations were proposed, and it was probable that Sir James Thoruhill's pictures in the dome would be taken away (although to a certain extent they had met with Wren's approval) and replaced with mosaic work. He did not believe that Wren ever contemplated such treatment. Was there no beauty, no magnificence in the interior as it was? Standing under the dome, he had learnt to be impressed with these features. He recommended that the committee should begin by cleaning off the dirt and whitewash from the walls. He had suggested that mosaic decoration might be used in some parts of the cupola, and other parts he should be glad to see painted. It seemed to him, however, that the committee were losing sight of the first object of the cathedral—viz., its use as a church. Anyone who, like himself, had attended the special services under the dome must regret that such great efforts should be virtually thrown away. The altar as proposed by the committee would be at a great distance from the people attending these services. Why not have a second altar under the dome, which would be visible at all points? If the choir, also, was in the midst of the people it might be possible for them to join in the chants, and it would be easy to put an additional portion of the organ into the arches. Mr. Somers Clarke and Mr. Micklethwaite entertained, he believed, similar views to his (Mr. Street's) own. The committee, instead of adhering to Wren's intentions, as they said, had, in his opinion, departed from them. The more he looked at the scheme of the committee, the more he was dissatisfied with it, and he considered that nothing more destructive of general effect could be conceived than a too-lavish use of colour, although he agreed that colour might be used with advantage in some of the more delicate parts of the work.

Mr. **GAMBIER PARRY** said that the work the committee had taken in hand was as important artistically as the draining of the Bedford Fen was important agriculturally, and there were just as many different opinions as to how the work should be done in the one case as in the other. As an amateur, devoid of professional experience, he must still ask to be allowed to hold his own opinion in the matter. He was sanguine that success would attend the scheme of the committee, and that Mr. Street would be the first to acknowledge it. No doubt it was advisable first of all to cleanse the cathedral; secondly, it was desirable to render it as commodious as possible for purposes of worship; thirdly, the committee had to consider the artistic elements of the scheme. The arrangement of the altar was the chief difficulty. He agreed with Mr. Street that nothing was worse in effect than colour badly used, but he thought that some one would be found equal to the occasion. "*Festina lente*," he thought, should be the motto of the committee, and they should proceed with their work, and not waste time in soap and whitewash. He thought Wren was capable of conceiving something more artistic than bare walls and isolated columns. In addition to the use of mosaic in the cathedral, a certain amount of paint and fresco should be adopted. In conclusion, Mr. Gambier Parry stated it to be his firm conviction that it was never intended that the organ should be concealed by the screen. The expedient of spreading it out right and left was the only one that should be resorted to.

The **DEAN** explained, with reference to Mr. Street's remarks upon the inconvenience of the arrangements for the services under the dome, that the subject had received full consideration at the hands of the Committee, and very much of the inconvenience complained of would shortly be remedied. The organ, as the Committee proposed to place it, would be better adapted for these services than where it now was. As to the cleansing of the fabric, that part of the work had been undertaken by the Dean and Chapter.

Mr. **POYNTER**, A.R.A., said he had had very little to do as yet with the decoration of buildings. All his experience had been confined to one mosaic, which has been done in the central lobby of the Houses of Parliament. He had not considered the decoration of S. Paul's as a whole at all. It seemed to him, as far as he recollected, that there were a great number of large spaces which might very well be filled either with fresco-painting or mosaic. It was more with regard to the subject of mosaic that he should like to speak, because Mr. Penrose, and most of the gentlemen who had mentioned it, had alluded to it as the mode that should be employed, in conjunction with coloured marbles, for the attainment of internal coloured decoration. But the use of mosaic seemed to him (Mr. Poynter) to be open to a very serious objection. It was impossible in the present day to return to the archaic form of mosaic; in other words, it was impossible in S. Paul's, which was a Renaissance church, to return to the method followed in S. Mark's at Venice. In order to have a mosaic properly finished in the present day, it was necessary for a painter to make a highly finished painting or cartoon of the work, and of this the mosaicist had to make an exact copy. This necessitated a double expenditure of time and money. But, if the money was to be had, mosaic was undoubtedly the best form of decoration that could be employed, because it was so absolutely permanent. His experience enabled him to say that unless a large sum of money was available, it was not advisable to attempt mosaic work, but it would be better to revert to the old method of fresco-painting. The First Commissioner of Works had lately called together a committee of the artists who were concerned in the decoration of the Palace of Westminster, to consider the question of fresco painting, and the reasons of its failure in some instances. A chemist—a very able man—had been engaged, in conjunction with this Committee, to inquire into the causes of the decay of fresco paintings. He (Mr. Poynter) had not yet painted in fresco himself, but he thought that the chemist referred to had pointed out, with perfect clearness, and in detail, the cause of every defect that had been discovered in the frescoes in the Houses of Parliament. The chemist said, with great truth, that, as in every fresco which he had examined some parts were as sound as on the day they were painted, it could not be on account of the climate of England that the other parts were destroyed. He merely mentioned this as throwing out a hint that fresco, besides mosaic, might be advantageously and economically used in the decoration of S. Paul's, for if the causes of the deterioration of fresco were now perfectly well known, there was, in his opinion, no reason why artists should not be able to avoid them. Unless an enormous amount of money was available, he thought that a recourse to fresco would be necessary; in any case he thought that fresco should be the mode of decoration employed for spaces tolerably near the eye, for being *it's-self* the artist's work, the effect would be better than that of mosaic, which, being but a copy or reproduction of the artist's work, would lose its artistic touch and individuality.

Mr. Micklethwaite condemned the proposals of the Committee, and contended that the scheme already put forward by him, in conjunction with Mr. Somers Clarke, was far preferable, inasmuch as in it Wren's work was preserved. The alterations made twelve years ago were now found to be unsatisfactory, and twelve years hence, or sooner, the proposals of the Committee, if carried out, would be viewed in the same light. He maintained that what was required for the better conduct of the services should be added leaving Wren's work as it was, so that if the additions were found unsatisfactory, they could be removed without detriment to the work of the great master.

Mr. Penrose having briefly replied to a few of the points raised in the discussion, the usual vote of thanks was accorded to him for his paper, and the meeting terminated.

CHRIST CHURCH CATHEDRAL, DUBLIN.

As we have already announced, Mr. Henry Roe, distiller, of Dublin (following the example set by the late Sir Benjamin Guinness with respect to S. Patrick's Cathedral) has offered to undertake at his own cost, the restoration and partial rebuilding of Christ Church Cathedral, together with the building of a Synod House. Mr. Street has been instructed to carry these works into effect, and we are this week enabled to publish that eminent architect's designs for this important work. Mr. Street, in 1868, reported to the Dean and Chapter on the state of the cathedral. In that report he pointed out how eminently suitable for modern uses a choir would be which should be built upon the lines of the original choir, of the shape of which he found most complete evidence in the crypt which still remains. He also showed how the present lengthy choir was the growth to some extent of chance and accident, and how the completely modern character of all its features made its preservation of no importance whatever from an antiquarian point of view. He had therefore received with great pleasure instructions from the Duke of Leinster to prepare some plans showing how the choir might best be restored to its original state, and how, availing himself of the additional ground thus acquired, he proposed to provide the hall and other rooms required for the accommodation of the Representative Synod of the Irish Church. Since that time he had received Mr. Henry Roe's instructions for the complete restoration of the whole building. In a report just published, Mr. Street says that the two subjects of the Church and the Synod House may be treated separately, but it would give him great satisfaction to see the complete restoration of the nave and the rebuilding of the choir of this fine Cathedral rendered more useful by, and connected structurally with, the meetings of the Synod. Each half of the scheme would re-act favourably on the other,—the restored Church making a most fitting place of worship for the Synod, and the Synod House taking architecturally the place once occupied by the subordinate buildings attached to the Cathedral, which seem, as far as can be gathered from the old plans and views of the Cathedral which remain, to have occupied most of the ground south of the nave from the eastern side of the south transept up to a line with the west front of the nave. Fragments of old vaults and buildings still remein here; they are not of very much interest, but might perhaps be saved, even if the ground on which they stand is required for new buildings.

In the plans for the new choir Mr. Street proposes, as closely as possible, to follow the lines of the ancient crypt, and to harmonise the elevation with the existing remains of the old work. The crypt is throughout its length, both under nave and choir, a work of very nearly, if not quite, the same age, and dates from just after the introduction of the pointed arch. Some of its arches are round, some pointed, and the only architectural details—the stoppings of the chamfers at the angles of the square piers which carry the vaulting—are of very similar character to those which ordinarily occur in early thirteenth-century work, and which are still seen in the transepts of this church.

Obviously, it is necessary to make the general proportions as to elevation and section much the same in the choir and nave, making, however, some modification in the details, so as to make them harmonise with the two old arches just referred to, which would be retained, and which would give the tone, so to speak, to the character of all the details. These details are not quite so beautiful as those of the nave, but Mr. Street would be content in such a case to follow them pretty closely as far as they are applicable, so as to make the choir like what it was originally, and not a mere repetition of the design of the nave.

The internal effect of such a choir is sure to be beautiful: the centre apse will have five arches round it, rich in mouldings; behind these will be seen the surrounding aisle, and out of it the three small chapels, which must always have formed so picturesque a feature both internally and externally. The details of the transepts, as well as those of the original arches still remaining in the choir, are very remarkable. They are, in regard to section of mouldings, so advanced in style that they would be held by most persons to be pure thirteenth century work, but they are combined with rich and varied chevron enrichments, and though the main arches are pointed, the subsidiary arches are round. Mr. Street thinks this last is a peculiarity in which it would be unwise to follow the old work. The choir will be seen fully from, and in connection with the nave, and it will be better, therefore, in his opinion, not only to make the main arches pointed, but to treat the smaller arches in the same way. Of the two circular turrets shown on the plan the foundations of one exist, and as there would be room for the other, and it is very probable that it once existed, it is proposed to restore it.

Mr. Street proposes to cover the whole of the eastern part of the church with groined roofs; vaulting is never more beautiful in effect than over a circular building, and there is no form for which wooden ceilings are less fitted; moreover, traces of groining shafts still remain against the old choir piers, and we are entitled to assume that as all the ceiling of the western part of the church was meant to be groined, the choir was undoubtedly meant to be so also. There are many questions of detail in the planning of the apse which Mr. Street leaves for final decision until he can take up the pavement of the choir, and trace, as he hopes to do, the plan of the church above the crypt. The plan which he has drawn fulfils what appears to be the necessary conditions of the case. It preserves all details of work still standing above the floor line, and it keeps strictly to the lines of the crypt walls. The consequence is that some difficulties present themselves, and that the plan does not quite conform to the strictly regular rules which were followed by the architects of the coeval French churches, to which we are most in the habit of going for examples of the proper treatment of apsidal buildings.

So far as Mr. Street is aware, there is no other example of work of this school in which the chevet, or east end of the choir, is treated at all on the same plan as at Christ Church, and consequently it is not much to be wondered at if the management of the plan is not so scientific as it is in districts where the same plan was constantly adopted. It is very rare to see a circular apse with square-ended chapels projecting from it.

At Christ Church the crypt has some peculiarities. The most important is, perhaps, that the side chapels open into the aisle without any intervening arches, and that consequently the aisle around the apse is not so decidedly marked on the plan as it usually is; and as all the walls and piers in the restored choir above ground are bound to stand upon existing walls in the crypt, it follows that this peculiarity must be preserved in Mr. Street's design. The groining of the aisles and of the side chapels will be continuous, without any intervening arches; but the groining of the central chapel will be divided from that of the aisle by an arch corresponding with the arch in the crypt beneath it.

The arrangement of the groining adopted by Mr. Street will allow of the arch at the east end of the choir, and that opening into the eastern chapel, being of the same size, so that a capital vista will be formed. In order to manage this arrangement of the plan, triangular groining compartments have been introduced in portions of the aisle groining.

In the restored choir, the choristers' seats would properly be placed at the intersection of the four limbs of the cross, under the central tower, whilst the congregation would occupy the floor of the nave and transepts. No plan is more suitable in every way for congregational purposes, none so convenient for the use of a choir, and there is none in which architectural effect and convenience are more completely in accord. In order to secure the uninterrupted view of the floor of the church, from the aisles of the nave to those of the choir, it would be necessary, therefore, not to cover much of it with the organ. Mr. Street proposes, therefore, to raise this in a gallery, occupying a portion only of the north transept. The nave, aisles, and transepts would then form the portion of the Cathedral intended for congregational purposes — the seats under the tower being reserved for those who will conduct the musical portion of the service.

The scale of the whole Cathedral is small as compared with that of most of our English cathedrals; but, in respect of beauty of design, it may safely challenge comparison with any of them, and it is so different from any one English church as to have something of the very special interest which always attends a new type or original development.

The complete restoration of the nave involves, among other things, the destruction of the chapter-room, vestry, and chapter library, which occupy what was originally the south aisle of the nave. They must be removed, in order that the south aisle may be rebuilt. In removing them, there will probably be found many fragments of interest belonging to the old work. One such feature has already been discovered by Mr. Street, consisting of a blocked-up doorway leading from the south aisle into a building in the angle between the aisle and the transept, and thence on into the crypt. This is a very fine doorway, with detached shafts in the jamb, banded at short intervals in the same way as the windows in the north aisle, and as the well-known doorway at Kilkenny Cathedral.

If, as is probable, or at least possible, a crypt exists under the south aisle, it will perhaps be found that it was damaged by the fall of the south wall, and that this is the reason why the arches opening into it have been walled up. But it will probably be necessary to put it again into a solid state of repair before the aisle is completed, and thus to restore the lower church as well as the upper to very much its original state.

When the vestry and chapter-room are removed, it will be necessary to find some other space for them; and Mr. Street thinks there can be no objection to the use of the nearly-detached Lady Chapel for this purpose. Its outer walls are entire, but there are hardly any ancient features remaining, and the building is now cut up into various rooms.

The Synod Hall, required to be about one hundred feet in length and forty feet in breadth, with division lobbies on either side, and, in addition, accommodation for committees, &c., would necessarily occupy a large area; and there is only one part of the ground, on the south side of the Cathedral, which seems to Mr. Street to afford the required space, without interference with the architectural effect of the exterior of the Cathedral. The greater part of the south side of the Cathedral will, if Mr. Street's plans are carried out, be new work. The south side of the nave will be a repetition of the north side, and as there is no difficulty about seeing the north side, it is not very important if the new south elevation is not entirely open to view. But there is no obtainable view of the choir, save that from the south and south-east, and it would therefore be a great mistake to shut the church out from view at all on this side, which would be the effect of any erection of buildings for the Synod on the south-east side of the Cathedral. It follows, therefore, that the proper site for the Synod Hall is on the western portion of the ground south of the Cathedral, belonging to the chapter. Here originally stood various buildings connected with the Cathedral. Here, therefore, Mr. Street proposes to place the Synod Hall and the buildings connected with it. The space will allow of its erection at right angles to the church, and leaving a small courtyard in the centre.

BUILDERS' BENEVOLENT INSTITUTION.

The thirty-fifth election of pensioners on the funds of this Institution took place yesterday (Thursday), at Willis's Rooms, King-street, St. James's. Including the two annuitants elected yesterday, there are now on the books of the Institution twenty men, each in receipt of £24 per annum, and twenty-five women, each receiving £20 a year, The candidates at yesterday's election were—Males: William Peters, Francis Sandon, William Gale, and Mark Mintry; Females: Harriet Proctor, Frances Seare, Mary St. George, Jane Brothill, Elizabeth Trevethan, Ann

Budd, and Eliza Lambert, there being vacancies for one male and one female only. In the absence of the President of the Institution (Mr. Alfred J. Mansfield), Mr. George Plucknett (Cubitt & Co.), on the motion of Mr. Joseph Bird, seconded by Mr. Dines, took the chair at twelve o'clock, and declared the poll open until three o'clock. At three o'clock, Mr. Joseph Bird was moved into the chair, in place of Mr. Plucknett, who had been compelled to leave on urgent business, and shortly afterwards the scrutineers (Messrs. Thomas Stirling and Matthew Hall) came into the room, and Mr. Stirling announced the numbers of votes recorded for the different candidates, in accordance with which the chairman declared that William Peters and Harriet Proctor were the successful applicants. Mr. A. G. Harris, the secretary, then read a letter from Mr. J. Waldram (Hill, Keddell, and Waldram), enclosing a cheque for twelve guineas as a special subscription to be equally divided between the two unsuccessful candidates (one male and one female) highest on the list of votes. (Mrs. St. George and Mark Mintry were announced as the fortunate recipients of this bounty.) Mr. John Thorn, in proposing a vote of thanks to Mr. Waldram for his generosity, warmly commended the excellent example thus set to the other subscribers to the Institution. Mr. Richard Richardson having seconded the proposition, it was carried by acclamation. Mr. W. Nicholson proposed, and Mr. T. G. Smith seconded a vote of thanks to the scrutineers; Mr. Stirling replied. Votes of thanks to the members of the committee who had attended, proposed by Mr. John Thorn, seconded by Mr. R. Richardson, and acknowledged by Mr. James Simpson; and to the chairmen of the day, proposed by Mr. Thomas Stirling, seconded by Mr. R. Richardson, and replied to by Mr. Joseph Bird, brought the proceedings to a close.

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THE SEWAGE QUESTION.

THE summer is at hand, and the earth will probably be thirsty. The science of irrigation is in its infancy, and people have yet to be convinced that the productions of the earth might be largely increased by the adoption of a conservative system in the management of the water supply with which we are annually favoured by Heaven. When rivers flood their banks and sweep away villages, the waste of water represents a waste of food ultimately, for the surplus should be stored to help the field and garden in the time of need. We suffer, as the *Gardener's Magazine* remarks, a perpetual waste of rainfall in the country, and of sewage in town. As to sewage, indeed, it is known to be the most perfect of all fertilising agencies, but instead of pouring it on the land to increase the land's production and the national wealth, we employ it to destroy fisheries and to fill the domestic water-butt; in fact, the highest use we at present know for sewage is to drink it, and it goes down the national throat as poison, instead of into the national purse as waste material beneficially utilised. It is no doubt true that the people are acquiring sound views on this important subject, and that in the end truth will prevail. But we fear there must be a long and injurious delay in adjusting the drainage of towns to the requirements of the country, and the demands of reason in the interests of health. It seems that, except in a few rare instances, the people prefer to pay a heavy price to poison the rivers from which they draw supplies of water for domestic use, rather than sanction a system of drainage which will not only prove self-supporting, but make an actual return in the way of profit, because, forsooth, a few persons have pronounced the sewage farm a delusion. Dr. Cobbold, F.R.S., has made a most objectionable impression on the public mind by his declaration to the effect that cattle fed on sewage-grown crops become especially infested with flukes, destined ultimately to happy residence in the human liver. The folly of such teaching, says our contemporary, is made evident by the fact that it is newly-taught, as if irrigation were a new thing. Dr. Cobbold is bound to show that in the irrigated fields of China, Asia Minor, and Italy, entozoa prevail, beyond the average, both in the intestines of cattle and of human beings. Nay, we would ask him to show an abundant production of these disgusting organisms on farms where manure heaps pollute ponds and brooks, and run to waste in the highways where ducks and geese rusticate. The proof would puzzle the learned gentleman, no doubt, and, as he has hitherto proclaimed an hypothesis only, we demand of all reasonable men a suspension of judgment on the point until the hypothetical case can be confronted with the logic of indisputable facts.

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A new Independent chapel is to be erected at Allerton, near Bradford.

BOOKS RECEIVED.

The Englishman's House, from a Cottage to a Mansion (London: J. C. Hotten), by Mr. C. J. Richardson, architect, is we suppose, intended for the edification of country gentlemen, who wish their "houses made picturesque" after the fashion exhibited on the frontispiece, where they are grouped together and on top of each other, in the style adopted by the artist of the willow-pattern plate, a collection of buildings apparently intended to represent Shakespeare's House, a bit of Hampton Court palace, an hotel, a Swiss châlet, and a cathedral with only one aisle and no transepts. Page 121 should be referred to for proof of Mr. Richardson's marvellous capacity for blending the useful with the ornamental. He has succeeded in utilising a suit of old armour by converting it into a stove, with the shield for the door, and a movable helmet to allow the reception of a cup of water; the whole being flanked by an imposing display of spears, pikes, and battle-axes. This is intended for the hall of a "Baronial Mansion," which, being interpreted, means for the "Elizabethan villa" to which Alderman Bloggins retired last year, having recently completed it with the aid of a book like Mr. Richardson's, and the assistance of the local builder and the Wardour-street furniture-makers.—*Patent Law and Practice* (Trübner) by "A Practitioner," and *A Concise View of the Law of Letters Patent for Inventions* (Longmans, Green, and Co.), by J. and J. H. Johnson, are two carefully-compiled and useful manuals, full of instruction to inventors. The second is the shortest and best.—*Trades' Unions and Public-Houses* (Longmans, Green, and Co.), is a letter from Mr. James Samuelson to the Secretary of State, in which Mr. Bruce is urged to introduce into his Trades' Societies Bill a clause forbidding the meetings of such societies at public-houses.—In *Gas, its High Price in the Metropolis and the Way to Reduce it* (Bell and Daldy), by C. G. Cleminshaw, the author advocates the purchase of the gas-works by the local authorities, the gradual laying out of an entirely new system of mains to replace the present wasteful plan, and the construction of new works in better situations.—*Drawing for Machinists and Engineers* (Cassell and Co.), by Ellis A. Davidson, is one of Cassell's technical manuals, and seems well suited for its purpose.—*The Seven Periods of English Architecture Defined and Illustrated* (E. and F. N. Spon), by Edmund Sharpe, M.A., is rendered additionally useful and interesting in this, its second, edition by the addition of eight plates of portions of Lincoln and Peterborough Cathedrals. *Tables for Computing the Contents of Earthwork in the Cuttings and Embankments of Railways* (E. and F. N. Spon), by William Macgregor, provide a simple and expeditious method of computing the contents of earthwork from cross sections. *Hardwicke's Shilling Peerage, Baronetage, Knightage, and House of Commons*, receive, as usual, our welcome, coupled, however, with a regret that their appearance is delayed till so late in the year.

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THE INSTITUTION OF CIVIL ENGINEERS.

THE members of this incorporated society held their last meeting for the session 1870-71 on Tuesday, the 23rd inst., when the chair was occupied by Mr. C. B. Vignoles, F.R.S., the President. A report was brought up from the Council, which stated that, during the present month, Messrs. Robert Harvey Burnett, John Carruthers, Lewis William Pritchard, and Charles Henry Waring had been transferred from the class of Associate to that of Member, and Messrs. Thomas Milnes Favell, Joshua Percy Josephson, William Macdonald Matthews, John Narciso de Olano, and William Cort Starie has been admitted as Students. The ballot was then taken for the candidates recently passed by the Council, and resulted in the election of Mr. Sandford Fleming, Chief Engineer of the Intercolonial Railway, Ottawa, Canada, as a Member; and of Mr. Edward Banfield, Manager of the Great Southern Railway of Buenos Ayres, Mr. Peter William Barlow, jun., Westminster, Mr. Walter Braudreth Bromley, Assistant Engineer P.W.D., India, Mr. Charles Toler Burke, Stud. Inst. C.E., Assistant Engineer for Irrigation, Dhoolia, India, Mr. Jabez Church, jun., Stud. Inst. C.E., Westminster, Mr. Charles John Geneste, late Contractor's Staff, Delhi Railway, Mr. John Lillywhite, Assistant Engineer, Admiralty Works, Portsmouth Dockyard, Mr. Joseph Newton, Royal Mint, and Captain George Swetenham, R.E., late Officiating Superintending Engineer, P.W.D., Hydrabad, as Associates.

It was announced that, during the session just concluded 25 members and 103 associates had been elected, and 50 students had been admitted, while 11 associates had been transferred to the class of member; and that there were now on the books 15 honorary members, 732 members, 1061 associates, and 207 students, making a total of 2,015 of all classes. It was mentioned that at the same period in 1856, when the institution had been in existence between thirty-eight and thirty-nine years, the gross number of all classes was 797, in 1861 it had risen to 945, in 1866 to 1,339, and now it was 2,015, representing an increase of 153 per cent. in the fifteen years.

PARLIAMENTARY NOTES.

The Thames Embankment.—Mr. W. H. Smith gave notice on Friday last, that on the 16th of June he should move his resolution in respect to the Thames Embankment.

New Forest.—Mr. Fawcett gave notice that on that day (Tuesday) month he would bring forward his motion with reference to the New Forest, and ask the house to affirm that it was inexpedient that any ornamental timber should be cut down, or any further enclosures take place in the New Forest during impending legislation on the subject.

The Thames Embankment.—Lord Dunsany asked whether it was intended to continue the Thames Embankment below Westminster-bridge on the south side.—Earl Granville said he believed that such was not the intention.

The South Kensington Museum. — Lord Cairns asked, on Friday, when it was intended to erect the building for the reception of the British Museum Natural History Collection on the piece of ground at South Kensington made over to the nation by the Commissioners of the Exhibition of 1851, under what authority a portion of that ground had been occupied by refreshment booths in connection with the Royal International Exhibition; whether the Government were aware that carpenters and other workmen had been openly at work on the ground during the whole of the last three Sundays, and whether steps would be taken to prevent such a use of public property.—The Duke of St. Alban's said that a great deal of time had necessarily been consumed in negotiations between the Board of Works and the Trustees of the British Museum; and that two or three months more would be required for the final settlement of the plans. A vote of £40,000 would, however, be taken this year for the new building. As the land had been made over to the nation at a price very much below its market value, on the condition that it should only be applied to the purposes of science and art, the Government did not think there was any impropriety in granting a temporary loan of a strip of it in aid of an undertaking so intimately connected with the promotion of science and art as the International Exhibition. He felt sure the contractors would be careful that the sensibilities of the inhabitants in the matter of Sunday observance should not be tampered with. He had latterly had occasion to notice what was going on, and he had not perceived any unusual business activity on the three days referred to.—Lord Cairns said that what he had to complain of was that there was exactly the same kind of activity on Sunday as on the other days of the week.—After a short conversation the question dropped.

The London Water Supply.—On Tuesday Mr. Kay-Shuttleworth called attention to the water-supply of the metropolis, and moved that the water supplied to the householders in London ought to be derived from pure sources, and to be delivered on the constant system. The hon. gentleman proclaimed that it was his object to disgust the House and the ratepayers of London with the water which was supplied to them; and in the promotion of this object he quoted pretty freely from evidence which had been given before the Commissions which had inquired into the pollution of rivers and the water supply.—Dr. L. Playfair, who seconded the motion, said a little upon the question of quality; but the part of the subject to which he mainly addressed his observations was the importance of a constant supply of water to houses of all classes.—Mr. Clay's opposition to the motion was founded a good deal upon the reports of Mr. Ayrton's Committee and the Duke of Richmond's Commission; and the member for Hull relied greatly upon the latter authority as an answer to Mr. Kay-Shuttleworth's proposal to substitute for the Thames water a supply drawn from the chalk districts. He objected to the adoption of such a resolution as this without further inquiry; and a similar line of argument was adopted by Mr. Hardy, who incidentally mentioned that it was his habitual practice to drink a glass of water the last thing at night, and the first thing in the morning, and asserted that it had never done him any mischief.—As a merely general statement, Mr. Bruce had nothing to say against the resolution, but he could not concur in any condemnation of the Thames water as unfit for consumption. He expressed himself strongly in favour of the introduction of a constant supply, especially in the poorer districts of the metropolis; and upon the whole was ready to accept the motion as a truthful and harmless representation of the facts. This course was, however, not entirely satisfactory to the House; and the previous question was moved by Mr. S. Cave and seconded by Mr. W. M. Torrens.—After two or three other speeches had been delivered, Mr. Kay-Shuttleworth expressed a desire to withdraw his motion; but Mr. Craufurd refused to permit him to take such a step; and with the assent of the member for Hastings the previous question was negatived without a division, and therefore his resolution was not put to the House.

Wellington Monument.—Earl Cadogan asked her Majesty's Government to state the nature and terms of the arrangement that had been made for the completion of the Wellington monument in S. Paul's Cathedral.—The Marquis of Lansdowne: As your lordships are in possession of correspondence which carries the subject down to the month of February in the present year, I shall confine myself to what has been done since that time. At the closing of the correspondence the matter stood thus: Mr. Stevens's contract had been determined, Mr. Penrose's superintendence of the work had been discontinued, and Mr. Stevens had been compelled to hand over to the Office of Works the portions of the work he had completed. Her Majesty's Government then found themselves in a somewhat embarrassing position, being responsible for the completion of the monument, the designer of which had been separated from it, and of which the fragments were some of them complete, others in process of completion, and some, which were scarcely begun, were lying at Mr. Stevens's studio or at the cathedral. Under these circumstances, two courses were fairly open to the Government, either of which they might be expected to adopt. The one was to call in the services of some eminent sculptor and entrust him with the completion of the work; the other was to have recourse to the system of inviting tenders, so as to open the completion of the work to competition, the same course having been pursued in regard to the original design. At that moment her Majesty's Government had the advantage of communicating with Mr. Fergusson, who was for some short time the professional adviser at the Office of Works. After consultation with him, and a careful consideration of the courses open to the Government, the conclusion we came to was, that it would be impossible to secure the services of an eminent sculptor to complete the work which had been carried thus far by another artist. A further conclusion was, that even if the work were entrusted to some other sculptor of high position and genius, there would, in all probability, be considerable incongruity and want of harmony in the character of the work. For these reasons, the idea was abandoned in the favour of the conclusion that Mr. Stevens should be allowed to complete the work. Mr. Stevens's workmanship is of undisputed excellence; and his design, whether original or not, is highly artistic. It was thought by the Government it would be much the best course that he should be allowed to finish the work, but without his unpunctuality and carelessness in meeting his business engagements. We then entered into an arrangement with Mr. Coleman, who had on previous occasions worked with Mr. Stevens, and had been entrusted with the execution of many artistic buildings and other works of art. Under that arrangement Mr. Stevens was to be charged with the artistic portion of the work, and Mr. Coleman with general superintendence and pecuniary responsibility. Within 2½ years the monument is to be completed. The total additional cost will be £9,000, which will raise the whole of Mr. Stevens's work to £22,000. Payments are to be made to Mr. Coleman by instalments, on the joint certificate of two officers at the Board of Works, who will see that the work is actually done before payment is made. I think the additional cost, though seemingly large, is not greater than we have reason to believe is warranted by the nature and character of the work; and is has, of course, the great argument in its favour, that in a short time we shall be able to complete a great monument which has unfortunately been too long delayed.—Earl Cadogan inferred from the statement of the noble marquis that the only reason why the Government allowed Mr. Stevens to complete the work was because they had failed to find anybody else to do it. In order that this assertion should not rest on himself, he referred to a letter from Mr. Russell, of the Office of Works, dated 22nd November, 1870, in answer to remonstrances on the part of Mr. Stevens as to the way in which he had been treated by the Office of Works. With regard to the originality of Mr. Stevens's design, he might say that at Verona he had seen the monument of a famous Italian family, and recollected that, if it were not identical with, at least it was very similar to Mr. Stevens's designs.

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ARCHÆOLOGICAL SOCIETY.

SOCIETY OF BIBLICAL ARCHÆOLOGY.—At the last meeting of this society, held on the 2nd inst., Dr. S. Birch, president, in the chair, the Rev. Dr. Heath and Mr. L. Blacker were elected members. The president read a paper upon a Tablet of Alexander the Great, recently discovered at Cairo. This tablet was dedicated to the goddess Buto, and dated in the seventh year of Alexander, B.C. 311. It records the restoration to the priests of Buto of the district formerly given to them by Khabach, an Egyptian monarch, contemporaneous with the latter years of Darius and Xerxes, which last monarch is mentioned in disparaging terms, probably to flatter Ptolemy, the Macedonian, ruler of Egypt, who is styled on it the Satrap of Alexander. Dr. Birch also contributed a second paper, based upon communications received from Lieutenant Prideaux, containing the interpretation, by himself and the Baron de Mattzan, of three bronze tablets with inscriptions in Himyaritic character recording adoration by Hanbaz, a Himyaritic monarch, to the deities Athtor and Wud, on the conquest of the town of Kuderamclck. A third paper was also read by Dr. Goldsmith, "On the Derivation of the Name Αιγυπτος (Egypt)." A discussion afterwards ensued, in which the President, Mr. S. M. Drach, the Rev. T. Gornen, Sir C. Nicholson, the Rev. J. M. Rodwell, and others, took part.

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Building Intelligence.

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CHURCHES AND CHAPELS.

BANBURY.—The corner-stone of a new Wesleyan Chapel has just been laid at Grimsbury, by W. Mewburn, Esq. The building, which is in the Classical style, will be constructed of red brick, with freestone cornice and dressings, relieved at intervals round the front and sides, with pilasters having capitals and bases. The chapel is erected solely by voluntary contributions, the greater part of which, however, has been generously given by W. Mewburn, Esq., of Wykham Park. The drawings were supplied by Mr. Henry Hackett, of Banbury, Mr. Albert Kimberley being the builder, at a contract price of nearly £1,600.

COATBRIDGE.—S. John's Episcopal Chapel, Coatbridge, Scotland, has been for some months closed for repairs and enlargement, and has now been reopened. The whole of the interior fittings, including gallery (where the organ was placed), have been removed. The plaster ceiling has been taken away, and the principals of roof, which were left originally undressed, have been boarded over where visible and stained and varnished, and the rafters are now covered with stained and varnished boarding as far as collar tie, thus giving an additional six feet to the interior. The new chancel, organ chamber, and vestry have been built out to the depth of twenty feet at east end of nave. The entire building has undergone a complete repair. The cost of the building and repairs have chiefly been borne by Colonel D. C. R. Carrick Buchanan, of Drunpallier. The carving was done by Messrs. Mossman, of Glasgow, the heating, ventilation, and lighting by Messrs. Joseph Gibson, & Co. of Glasgow, and the whole was from the drawings, and under the superintendence of Messrs. Kennedy and O'Donoghue, of London, Glasgow, and Bangor. The cost was over £1,000. A new porch at entrance has been added, and the seating is entirely new.

LIVERPOOL.—On Saturday, the Bishop of Chester consecrated, at Liverpool, the new church of S. John the Baptist. The church is a reproduction of the style of English architecture prevalent in the time of Edward II. The building was to have been consecrated about twelve months ago, but when the congregation had assembled, they found that the Bishop had at the last moment declined to consecrate the building, on the ground of the significance of the symbolism in some of the paintings and images. A beautifully-carved reredos, extending the whole breadth of the church, was specially objected to. This was a Continental importation of early execution, probably about the time of Albert Dürer, and was a triptich emblematic of the Passion of Christ, and comprising a series of exquisite Scriptural scenes, from the Betrayal to the Visit to the Sepulchre. This has been replaced by a painting in panel work, representing the Baptism of Christ. This alteration seemed to satisfy the Bishop, but it is really very immaterial as regards the character of the interior, which is one succession of decorative painting throughout, representing Scriptural scenes. Amongst these is an elaborately executed reproduction of the tree of Jesse, on the west wall. At the east end is a large stained-glass window, rich in Scriptural scenes. The church was built by Mrs. Reade, wife of the incumbent, at a cost of £15,000. Mr. Bodley, of London, is the architect. The stone with which the church is built is a mixture of yellow and red sandstone, and a most marvellous harmony of colour is produced in the interior by the way in which the tone of the decorations blends with the solid stone pillars. There are 800 sittings, some of which are free.

PILL, NEAR BRISTOL.—On Wednesday, the 24th May, the foundation-stone of a new Wesleyan Chapel and School was laid at Pill, near Bristol, by W. Hunt, Esq., who has kindly presented the site. The building is being carried out by Mr. J. W. King, builder, of Clifton, under the supervision of E. A. Lansdowne, architect, whose designs were chosen in competition.

ROCHDALE.—On Saturday, the new church of S. Peter, Newbold, Rochdale, was consecrated by the Bishop of Manchester. The style of architecture is Pointed Gothic, treated so as to suit the rough rubble stone and red brick which constitute the chief materials of the building. The tower, which at present is carried only a little above the level of the aisle walls, will when finished be surmounted by an octagonal broach spire, which will be carried to 135ft. from the ground. The ground plan comprises, besides, porches, nave, north aisle, ending in minister's and choristers' vestries, south aisle, ending in the organ chamber, and a chancel with a semi-hexagonal apse. The church will seat 670 persons, and the contracts for the various portions of the work amount altogether to £3,750, which sum covers extras. The architects are Messrs. M. and H. Taylor, St. Ann's Churchyard, Manchester.

SKELTON.—Last week the foundation-stone of a new church was laid at Skelton-upon-Ure, by Lady Mary Vyner, in memory of her son, Frederick Grantham Vyner, murdered by Greek brigands. The Church is in the twelfth century style of architecture. Mr. W. Burges, of London, is the architect, and Mr. John Thompson, of Peterborough, the contractor. The church is to accommodate about 230 persons, and to cost £10,000.

S. MARY-LE-STRAND.—The church of S. Mary-le-Strand, which was re-opened on Sunday last after undergoing complete internal restoration, was built by James Gibbs, the architect of the church of S. Martin's-in-the-Fields; the first stone was laid on February 25, 1714, and it was finished on September 7, 1717. The following is the account given by Gibbs of his work:—"The new church in the Strand, called S. Mary-le-Strand, was the first I was employed on after my arrival from Italy, which, being situate in a very public place, the commissioners for building the fifty churches, of which this is one, spared no cost to beautify it. It consists of two orders, in the upper part of which lights are placed; the wall of the lower, being solid to keep out noises from the street, is adorned with niches. There was at first no steeple designed for this church, only a small campanile or turret. A bell was to have been over the west end of it; but at the distance of 80ft. there was a column 250ft. high, intended to be erected in honour of Queen Anne, on the top of which her statue was to be placed. My design for this column was approved by the commissioners, and a great quantity of stone was brought to the place for the foundation of it; but the thoughts of erecting that monument being laid aside at the Queen's death, I was ordered to erect a steeple instead of the campanile first proposed. The building then advanced 20ft. above ground, and therefore admitting of no alteration from east to west, I was obliged to spread it from north to south, which makes the plan oblong, which should otherwise have been square." On the site of this church, says the *Pall Mall Gazette*, stood the Maypole, which, according to Strype, "being grown old and decayed, was, anno 1717, obtained by Sir Isaac Newton, Knt., of the parish, and being taken down, and carried away through the city in a carriage of timber (April, 1718) into Wanstead, in Essex, and by the leave of Sir Richard Child, Bart., was reared up and placed in his park there, the use whereof is for the raising of a telescope, the largest in the world, given by a French gentleman (M. Hugon) to the Royal Society. Here also was the first stand for hackney carriages, established by Captain Bailey, who "erected according to his ability some four hackney coaches, put his men in livery, and appointed them to stand at the Maypole in the Strand," and also, like Mr. Bruce, "gave them instructions at what rates to carry men into several parts of the town where all day they may be had."

BUILDINGS.

CAMBERWELL GREEN-COAT AND NATIONAL SCHOOLS.—The trustees of these schools some months ago invited competition from several architects and surveyors in the preparation of a design for the rebuilding of these premises. Several designs were sent in. That by Messrs. Pain and Clark, of Buckingham-street, Strand, was the one selected. and it is now being carried out, under the direction of those gentlemen. Accommodation is provided for 800 children, with three residences for the masters and mistresses. The amount of the contract is £4,322.

HEREFORD.—A new swimming bath is being built here. The building itself is 70ft. long, and 32ft. 6in. wide. At the end there will be sixteen enclosed dressing-boxes, and on one side there will be a range of stalls affording sitting accommodation. The building—the walls of which will be lined on the inside with white Suffolk bricks, ornamented with red ones, in reticulated work—will be covered by a handsome roof, constructed of iron and wood, and light will be furnished from the top and from the side windows; ventilation has also been well regarded. The dimensions of the bath itself are:—Length, 52ft.; breadth, 23ft. 6in. There will be a constant flow of cold and hot water, provision being, of course, made for an outflow, and also for the bath being thoroughly cleansed as often as may be necessary. The temperature of the water will be tepid, and arrangements can be made for an increase or decrease of temperature, according to the season. The maximum depth of the water, to the top of the outflow pipe, will be 5ft. 6in., and the minimum depth 3ft. 6in. The bath is lined with enamelled bricks, and will be approached by corridors, one on each side from the lobbies of the present baths. By the facilities which will be provided for the use of hot and cold water, the bath can be used at any time of the year, and when completed it will be one of the best establishments of the kind in any of the surrounding counties. It is being built from the designs and under the superintendance of Mr. T. Nicholson, F.I.B.A., architect, Hereford, Mr. Gough, of Bishop's Castle, being the builder.

New Police Court.—A new Police-court for the transaction of the business of the Worship-street district has recently been completed, within a minute's walk of the old building, and was occupied for the first time on Monday. Messrs. Howard Brothers executed the work, Mr. F. H. Caiger, the surveyor to the Metropolitan Police, furnishing the designs. The court itself is 35ft. in length by 25ft. in width; it has a lantern roof, and is lighted and ventilated by Strode's patent sunburner. From Windmill-street there is an entrance for the prison van to set down and take up accused persons, by which the necessity of doing so in the street, in the midst of a disorderly crowd, as at the old court, is entirely obviated, and any attempt to rescue a prisoner rendered impossible.

Sheffield.—On Friday last, the corner-stones of the Ragged Schools, Peacroft, were laid. The new buildings, which have been designed by Messrs. Flockton and Abbott, architects, will be plain but substantial, a little in the Gothic style, and two stories in height. Upon the ground floor there will be a school-room, 65ft. by 32ft., and two class-rooms, each 17ft. square, and the arrangement of the floor above will be exactly similar. The buildings are to be of brick, with stone dressings, at a cost of over £4,000. The following are the contractors:—Masons' work, Mr. J. Butler; joiner, Mr. J. Robertson; slaters' and plasterers', Messrs. Harrison and Chadwick; and plumber, Mr. B. Corry.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—W. R., J. & W., R. C., T. K. & Co., A. J. T., G. G. W., C. K., J. A. M., H. & Sons, J. & Co., M. B. A., G. S. F. W., G. C., E. C. K., W. B., L. & R., W. L. & R. B., S. W. & Co., L. H. B., C. B. & Sons, D. J. W., M. & Son., P. E. M., E. H. C. B., J. K. M., L. & N., R. G., W. G., J. H., F. W., M. H. & Co., W. W.

Erratum.—In "Gossip from Glasgow," in our issue of this day week, for "Scottish Widows' Fund Assurance Company, by Messrs. Peddie and Kinnear, of Edinburgh," read "The City of Glasgow Assurance Company," &c. The error was made by our correspondent.

M. B. Adams.—We will give the Saxon Church of Sompting, but not for some time.

T. Garratt.—Sketches returned.

A Reader.—It may be usual to use an inferior stone after a contract is made, but it is immoral and illegal to do so.

J. M. Bates, of Stevenage, writes us to say that our account of S. John's, Bathwick, is incomplete. We said "the woodwork was done by Mr. Mercer, of Bath." Mr. Bates says, "The oak chancel stalls as well as the altar of oak were made and fixed by me."

A. J. Lacey.—Drawing returned.

R. C.—We would gladly insert letters in opposition to our writer's views on "Furniture at the National Exhibition," but yours is written in such questionable taste that we really cannot publish it.

W. O. Pellowe.—Very soon.

Correspondence.

CHAPTER-HOUSE, WESTMINSTER.

To the Editor of the Building News.

Sir,—On visiting with the Conference party the Chapter-house at Westminster to-day, I was struck with its altered appearance from what it was when I saw it before, about ten years ago. It, to me, is sadly changed for the worse. On my first visit I saw through an opening in the wood-floor the amazing perfectness of the tile pavement just below. So perfect did the tiles appear, I could scarcely believe in their antiquity; whilst the mural paintings, though nowhere perfect, extended, if my memory does not deceive me, with more or less distinctness all round the building. To-day I found the pavement very worn and dilapidated, and the painting only visible in a few spots. My memory may have deceived me, otherwise it certainly appears that here there has been, as usual with restorations (!), either great neglect or flagrant intentional destruction. If the tile pavement and the painted surfaces have not been carefully covered up during the execution of the new works, and the ground and wall surfaces thus preserved intact, they certainly ought to have been. M.

BETTER THAN REPORTED.

Sir,—I have just read the paragraph in your last weeks impression, p. 373, headed "Legal Intelligence," which had previously escaped my notice, and am surprised to find "W. S. Hollands, described as an architect of Richmond-terrace, Clapham-road, suffering from small-pox," &c. I beg to say that I am enjoying very good health, and that, according to the last census return, there is no other person living in Richmond-terrace of my name.—I am, &c.,

William Thomas Hollands.

48, Richmond-terrace, Clapham-road, May 20th.

PARK-LANE AND HYDE PARK CORNER.

Sir,—Allow us of your courtesy to state that the suggestion of a cutting from Park-lane to Grosvenor-place, under Piccadilly, set forth in your number of the 19th inst., is not new. It was put forward by our firm in 1865. Of course nothing was done, though the cost would be less than was offered by a private individual to keep Hamilton-place intact. We hope the idea will be carried out now.—We are, &c.,

Elliott, Warren, & Bernard.

36, Parliament-street, May 23, 1871.

[It is worth recording that a similar suggestion was made to us in a communication from Mr. Thomas Morris, of 12, Regent-street, about four years since, but from excess of matter at the time the communication was not inserted.—Ed.]

S. JOHN'S, BATHWICK.

Sir,—I find an error in your last paper, which, though not important, it may be as well to correct. In your report of the consecration of S. John's Church, Bathwick, you attribute the design of the original church, as well as that of the new portions, to Mr. Blomfield, whereas I was the architect of the church which Mr. Blomfield has now enlarged.—I am, &c.

Charles E. Giles.

7, Furnival's Inn, Holborn, E.C., May 22nd, 1871.

THE PROPOSED REVISION OF THE INSTITUTE SCALE OF CHARGES.

Sir,—It should be always agreeable to find that we are "getting on," even if slowly, still surely. Some of us only regret that so little is accomplished in such a length of time. In the month of January, 1858, the writer addressed a letter to the *Builder* complaining of the want of some definite information as to architects' charges besides the vague traditions then prevalent, out of which nothing could be made but that architects somehow worked for 5 per cent. In the year 1862, to my great satisfaction, most of the information I asked for was for the first time given to the profession by the Royal Institute of British Architects. But even then, for a long time it remained only in the books of that body, or in the professional journals, so that in March, 1863, I endeavoured in your columns to urge the importance of having the scale agreed upon printed and published, with the signatures of the officers to show where it came from. Of course there were some of your correspondents who could not see the least use in this (and when are there not obstructives in the way of a useful measure?), but after a while it was published, without any name attached; but soon again given to the public in proper form at the moderate charge of 3d. per copy. Well, again in 1869, feeling very strongly the necessity of a revision of the existing scale, I urged this also through your columns, and now, only two years after, the subject is to be dealt with, I hope, completely and finally. Of course I do not mean to claim, on the *post hoc. ergo propter hoc.* principle, that my feeble efforts have had anything to do with this advance, but I appeal to it as proof that I have not advocated useless or Utopian measures, like some of your correspondents who constantly "rail in good set terms" at architects and their system of percentage, without being able to suggest anything better.

A very proper invitation has been issued to architects to aid by their suggestions the Committee charged with the subject, which I hope will be extensively responded to. As, however, this question is pre-eminently a public one, if you can find room in your columns for these observations, they may tend to awaken general interest and secure unanimity in the conclusions that may be arrived at, for all experience tells that most questions are more readily disposed of by being freely ventilated.

The chief, indeed almost the only, complaint against the present scale is, that it is not sufficiently explicit to form the basis of a contract, and leaves too many important questions untouched. I have seen it on a few occasions in the hands of counsel, and have had to blush for my calling on hearing how readily they managed to drive holes through it. The following series of queries on the different clauses are such as might occupy judges and juries for weeks, and on which any number of architects would be found ready to give contradictory evidence. I hope the revision Committee will not leave the matter till they have finally settled them.

Clause 1.—What is meant by the "incidental expenses" which an architect is entitled to charge beyond the 5 per cent.? In a recent case architects flatly contradicted each other thereon, but the jury (rightly, I think) gave it the most liberal and comprehensive meaning, making it include stationery, postage, and all such matters.

6. "Two and a half per cent. on omissions." Is this fair, if only general drawings were prepared for them, and is it enough if the details, estimates, &c., had all been prepared? Surely the percentage on omitted works should be graduated according to the amount of work done by the architect in reference to them.

7. Does "travelling" include hotel expenses? I have heard able lawyers argue that it does not.

9. What is the meaning of "an easy distance from the architect's office?" Does it mean easy to walk, ride, or drive, by road or rail? 10 miles, 100, or 1,000? This clause opens the way to any amount of dispute.

10. Does the percentage include surveys of sites or of old buildings, attending at courts, arbitrations, &c., in the event of disputes? I believe it was never meant that it should, but these matters should be mentioned in order to exclude them.

12. What if the architect's work should have been interrupted before it was "ready for estimate?" He cannot claim for 2½ per cent. till it has reached that point. An intermediate rate should be given, say 1½ per cent. for general drawings.

13. Supposing the work should have proceeded beyond the getting of tenders, and the details be prepared, how are they to be charged for? The Americans, in a much shorter paper, have given intermediate rates for both the last-mentioned items.

14. How much is to be the percentage on alterations, or are architects and clients to wrangle as they best can about them?

16. How much is meant by "additional remuneration?" Why not give proper rates per cent. at once for detailed estimates?

17. I anticipate an attempt will be made to set this rule about drawings aside, because Mr. Baron Bramwell has recently pronounced the latter part of it unreasonable. I have no doubt the learned Baron would pronounce a number of the other clauses, including the time-honoured 5 per cent., unreasonable also. I think, however, architects are, or ought to be, as competent judges on these matters as lawyers, and it should be remembered that they are now settling on what terms they will do business in future. Nobody has a right to dictate to them on this matter. If a certain scale be agreed to between architects and their clients, it becomes matter of contract, and neither "baron or squire, or knight of the shire" has any right after that to enter on the question of its reasonableness or otherwise. Judges would simply have to tell juries to act on the contract. This is just what is done by the stockbrokers, for instance. If any one buys stock he receives a memorandum that it is "purchased subject to the rules of the Stock Exchange." These rules, in all likelihood, would be considered unreasonable by judges such as the above-mentioned, but he would have to direct a jury that they formed part of a contract, and should be acted on. Now, what have architects to do but simply at the outset of a business to intimate to the client in the same way, that he undertakes the business "subject to the rules of the Institute?" None but "noble savages" like Mr. Ayrton would object, and even that astute man has to put in a saving clause to protect his special contracts from the operation of the rules aforesaid. If the revised scale now about to be issued is to be of any use it must be dealt with in this manner. For my part, whenever a client wants to make a special bargain, I suspect he means to "chisel" me if he can, and often find it so. The best way in such cases is to ask about once-and-a-half what the usual rates would come to, and then give the client the option of falling back on the latter.

Apologising for this digression, how are we to deal with the question of property in drawings, and copies of same? The Institute and Mr. Barry have beaten a most ignominious retreat on this question, frightened almost at the sound of their own voices, and the only way the damage can be repaired is by making clear contracts in future. Having already considered how the scale is to be made, the basis of such, I propose that the clause in it about drawings be as follows:—"The above-mentioned charges include but one set of the drawings and specification, which the client shall have full use of, and access to, at all reasonable times for the purposes of his works, but the property in which shall vest in the architect. Should the client require copies he shall be entitled to them at a fair charge for copying only, said copies not to be used for any other works without the consent of the architect. Such further copies as may be required by the builder, to be made at his expense and returned to the architect on the completion of the works." Now such a clause as this, even apart from its force as a contract, would completely take the wind out of Baron Bramwell's argument "How can the work be carried out if the client does not get the drawings?" also Mr. Ayrton's, "How can we tell where the flues and drains are?" and equally cuts the ground from under the *quid pro quo* of some weak-minded architects. Falstaff, we all feel, was right when he asked, "Shall I not take mine ease in mine inn?" But what, if not satisfied to use, he should claim property in the hostelry besides? The client may take his full toll out of the architect's drawings, but must not seize upon or dispose of them.

22. What is the proper commission to be charged on roads, fences, &c.? I had a deal of trouble to convince an eminent architect arbitrator once that it was obviously 5 per cent. by clause 1, and some very able men insisted it should be much less.

25. A rate (5 per cent.) being given for estimating dilapidations, why not give a rate also for superintending the repairs? I consider another 5 per cent. reasonable.

26. The sooner this clause is struck out the better. In a paper professing to give the "usual and proper practice," the whole modern system of measurement quantities and contracts is ignored, or merely referred to as "not desirable," and a mode of operation recommended the reverse of what actually prevails. What super-eminent ideas of virtue pervaded the minds of the original founders of the Institute when they made it a high crime and misdemeanour for a member to do a bit of surveying for any works but his own, I cannot imagine. They were only equalled by their successors of 1862, who pronounced it "not desirable" for an architect to take out quantities even for his own works. This absurd policy, with more of the same kind, has sent away from the architectural profession a vast amount of lucrative business that properly belongs to it. No wonder that the Institute does not command more general support. No wonder that our railway stations and bridges have gone to the Civil, and our public buildings to the Royal Engineers, and that surveyors, auctioneers, and house agents have got most of the business connected with the valuation of property into their hands. These latter gentry never scruple to dub themselves architects, and do a bit of "architecting" when they get the chance; but our Institute, though it insists on a knowledge of measuring and valuing in its examinations, will not allow it to be practised by its members. The boy Robinson, in the fable, who "could swim very well," was flogged by his schoolmaster for exercising his powers, and the Institute acts exactly like that wiseacre. How many successful architects have begun by doing surveying work? These rules may hold out for a while against reason and common sense, but cannot do it for long. The wonder is how they have been allowed to remain till now.

I propose that a fair series of rates should be given for surveyor's work, quantities, estimates, &c., as well as for everything else, and that the surveyor's duties be properly defined, leaving it quite open to architects to do that sort of work or not, just as they please. Most architects in large practice would give out their surveying as they do at present, but it would be useful to many struggling practitioners to be able to increase their incomes by doing it themselves.

The exact nature of an architect's engagement, and whether the client has a right to dismiss him or not, has been much discussed of late, and requires to be better defined. If the client can dismiss the architect at any stage of a business, as some imagine, then the latter has a reciprocal right to throw up the work and send in his bill at any moment also. If, on the other hand, the architect who has accepted a commission is bound to execute it, the client cannot dismiss or supersede him without adequate compensation. It is obviously absurd to fancy that either can play "fast and loose." I think the second the most reasonable, as it is the legal view, but it is rare to hear two architects express the same opinion on the subject.

Again, what is to be done when an architect dies or becomes incapacitated for business, during the progress of his works? The client, the executors or representatives, and the builder have each a right to be considered in determining how the work is to be carried on, and in most cases manage to agree somehow; but they may not agree, and I doubt not, if we knew the particulars of many cases of this kind, it would be found that the poor architect's representatives had just to take whatever they could get, and be thankful. I believe but for a bit of generosity on the part of the Liverpool people, the widow of the late H. Lonsdale Elmes would have fared very badly, and the amount awarded to her, judged by our present standard, seems very small. It is a very painful reflection for an architect that should he be called away in the middle of his works, no proper means exist of settling what is due to his family out of them. To meet this I propose that a clause be added as follows:—"Should the architect die or become incapacitated from business during the progress of the work, the client shall be at liberty either to pay his representatives for the work done at the rates given above for 'abandoned or omitted work,' receiving from them copies of all the documents then prepared as far as may be necessary for the completion of the work, or to call on the representatives to appoint another architect at their charge to complete the work, paying to them the same fees on completion as would be due to the original architect." Most of the foregoing suggestions were embodied by me in a revised edition of the scale published by you in 1869. It has been frequently objected that the document would then become so lengthy as to "frighten" clients. Well, it goes after all on the same sized paper; and as for frightening the public by a full and explicit statement of terms, I do not believe in it. Is the public frightened from taking cabs, by seeing at every stand a full table of fees and distances, or from travelling by railways which publish clear time and fare tables? I always sleep the sounder in a hotel where the tariff is hung up in every room. The length and precision of a builder's contract never frightens a client; on the contrary, most sensible men would be very chary of employing a builder without one. If all respectable architects could only agree to do business on terms to be now settled, clients would soon find that they had only to choose the best man for their particular business, and not bother about the terms. I believe most clients worth having do this at present, but if any want to find "cheap jacks," leave them to such as they can find, and perhaps they will soon repent of their choice.—I am, &c., W. F.

Intercommunication.

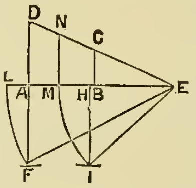
QUESTIONS.

[2231.]—**School Building.**—In these days of increased school accommodation it is necessary, in towns, to build one school over another. I should like to know what is the best means of preventing the noise of the upper school disturbing the lower school, without the expense of brick vaulting.—F. M.

[2232.]—**Grease Stains in Floor Boards.**—What will remove grease stains in floor-boards that have been saturated with oil from machinery?—T. C. K.

[2233.]—**Chemical Works.**—Can any fellow-subscriber inform me whether the ashes and clinker from chemical works are injurious to mortar or concrete mixed therewith? I am very much inclined to think it has a tendency to heave, similar to unslaked lime.—W. N.

REPLIES.



[2210.]—**Problem.**—Let A B C D be the given figure, D A, C B, being parallel. Produce A B, D C to cut in E. Produce D A to F, making A F = B E. With centre E and radius E F describe arc F L cutting B A produced in L. Bisect L E in H. Draw H I perpendicular to A B and equal to H E. With centre E and radius E I describe arc I*m*. Draw *m n* parallel to A B, and *m n* will divide the area A B C D into two equal parts as required.—F. H. A. Hardcastle.

[2224.]—**The Cymagraph.**—To "J. R. W."—My address is as follows:—W. Larner Sugden, Leek (a flourishing town of North Staffordshire).

[2226.]—**School of Art Examinations.**—The Committees of Schools of Art have the power to charge a fee of 2s. 6d. for papers worked at a Government Examination by candidates who are not students of the school (*vide* "Art Directory," 1871, page 49).—Art.

[2227.]—**Christmas Cards.**—Marcus Ward and Co., of Belfast.—X.

[2228.]—**Sketching Tour.**—Try Shropshire; the county teems with architectural antiquities and other objects of interest, and the visits of sketching students are, like those of angels, "few and far between." For a brief synopsis of the castles in Shropshire, see the Building News of June 24 and July 29, 1870.—Salopian.

[2230.]—**Pulpit.**—Pulpits vary so in height that there seems to be no fixed rule, as architects generally design them to suit the construction of the church and the area the voice has to cover. But 3ft. 2in. seems to be about the average height from base of pulpit to top, as the following dimensions of pulpits, designed by different architects, will show:—Free St. Luke's Church, Glasgow, from floor to base of pulpit 8ft. 1in., and from base to top 2ft. 11in.; All Saints', Windsor, from floor to base 2ft. 9in., and from base to top 3ft. 4in.; Church of Holy Innocents, East Shefford, Berkshire, from floor to base 2ft. 5in., and from base to top, 3ft. 3in.; and in the Large Court of the South Kensington Museum (according to the *Pall Mall Gazette*) is to be seen a towering Mahomedan pulpit some 30ft. high, that has been brought from a mosque in Cairo.—Andy Andy.

Our Office Table.

The Destruction of Paris.—The shameful destruction of the monuments and public buildings of Paris has few parallels in history. Jerusalem was burnt, but it was by the Roman soldiery enraged at the stubborn resistance of its inhabitants. Moscow also perished by fire, but it was kindled by the patriotism which burnt with a still fiercer flame in the breasts of its insulted citizens. It has been reserved for the people of Paris, at the termination of a period of national disaster unsurpassed in history, to permit first the desecration and then the destruction of their beautiful city, which even the ruthless Germans spared. We fear to think on what we may have lost. The Palaces of the Louvre and the Tuileries are gone, with all their historical associations. The scene successively of the splendour of the court of the chivalrous but vain, Francis the First; of the murderous fanaticism of Charles IX.; and the atrocities of the First Revolution. Notre Dame, too, its restoration hardly completed by the Second Empire, may be fast becoming a heap of stones. The Hotel de Ville is gone already. For only one of these three, how many of Baron Haussmann's new and pretentious palaces would we not have given to the flames! Truly, if the pity of all the world could have saved her, Paris had not been destroyed.

Asphalte Paving.—A Suggestion.—"A Surveyor," writing to the *City Press*, remarks upon the anxiety of the ratepayers of the City to get their particular streets paved with asphalte instead of granite. He says its advantages are so patent that it is very desirable that the whole of our busy thoroughfares should be speedily laid with this material. The expense of the present mode of paving with asphalte, he goes on to say, is no doubt a great hindrance. "The removal of old granite paving-stones and laying a foundation of from 8in. to 10in. of concrete is quite needless, and appears to have been adopted to put the ratepayers' money into the pockets of the contractors for the new paving. Let the mortar and dirt be picked out from between the old stones, and asphalte poured in instead, and the old roadway covered with a layer of the same thickness as at present. You will then get a better and more durable paving at the rate of two yards for one." "A Surveyor" cannot, we opine, have given much attention to the question of street paving, or he would not make such an impracticable suggestion as that for picking the mortar and dirt "from between the old stones." To do this each stone would have to be taken up and the mortar scraped or knocked off. And when this was done, would not the stones be worth more for street paving in other parts of the City than the concrete foundation for the asphalte would cost?

Testimonial to Dr. Zerffi.—A large number of students assembled on Friday last, in the lecture theatre of the Birkbeck Institution, Southampton-buildings, Chancery-lane, for the purpose of presenting a testimonial to Dr. G. G. Zerffi, of the Science and Art department, South Kensington, their Professor of Art History, Universal History, Physical Geography, &c. They were addressed by Mr. G. M. Norris, the secretary of the institution, and by Messrs E. Rogulski and J. A. Newcome, the treasurers of the testimonial fund. These gentlemen alluded in terms of high commendation to the great benefit derived from the services of Dr. Zerffi, who had, without any regard to pecuniary considerations, laboured in the cause of science, and had gained the admiration and affection of all his pupils. On behalf of the students they then presented a pair of magnificent candelabra and a tazza in bronze to Dr. Zerffi, who made a suitable reply. Votes of thanks to the secretary and treasurers terminated the proceedings, at the close of which Dr. Zerffi was loudly cheered.

A Hard Nut to Crack.—In cutting through a solid block of Aberdeen granite, about five feet square, in the yard of Mr. A. H. James, at Newport, on Tuesday, the workmen discovered in the interior a small nest containing four or five living grubs. They died shortly after their exposure. There appeared to be no inter stice in the granite which afforded any means of communication with the exterior, and the question will naturally arise with the curious how they got there, and how long they had been there. The block of granite has been in Mr. James's yard two years.

Preserving Wood.—In the specification of a patent granted to N. H. Thomas, of New Orleans, he says:—"My method is the simple process of saturating the wood in resin oil, warm or cold, or at any required temperature, according to the circumstances. In the event of the wood being of moderate dimensions—thin board, for instance—I apply the oil cold; and for wood of large dimensions I apply the oil hot, in either of the above cases, by immersing the wood in the oil, or by applying the same to the wood with a brush, or in any convenient manner whatever, so that the wood may be thoroughly saturated with the oil."

"Flint Jack."—This notorious fabricator of flint and stone antiquities is at present among the Yorkshire towns in the North Riding. His present trade is the vending of arrow-heads made of bottle glass, which he works with even more skill than flint, and which he is disposing of by the score.

An Alms-dish for S. Paul's.—Mr. Butterworth, the law publisher, has undertaken to present to S. Paul's Cathedral a magnificent alms-dish in silver-gilt, two feet in diameter. It is to be similar in the design to the altar plate, made by the Messrs. Lias for Mr. Sparrow Simpson, already presented to the cathedral.

Sacrilege at Charlton Kings.—The beautiful new church at Charlton Kings has been broken into, and several figures around the font and in the recesses of the reredos damaged, the head, arms, and feet of the figures representing the Saviour and the Apostles carved around the font knocked off; and a carved representation of the "Last Supper," in the reredos, mutilated in like fashion. There is reason to believe that the authorities are in possession of information which will lead to the discovery of the depredators of such wanton mischief.

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Timber Trade Review.

Prices, May 22.—Per S. Petersburg standard:—Dram second yellow, £6 10s.; ditto third yellow, £5 to £5 15s.; fourth white, £5 5s.; Fredrickstadt mixed yellow, £9; Gefle mixed yellow, £9; ditto third yellow, £7 10s. to £8 5s.; Gothenburg mixed white, 3 × 9ft., £8 15s. to £9 10s.; ditto third white, 3 × 9ft., £7 10s.; Husun third yellow, 3 × 7ft., £7 15s.; Jacobstadt first mill-sawn yellow, 3 × 7ft., £7 10s.; Kragero yellow, £9 5s.; Rystadt first yellow battens, £6 5s. to £6 15s.; Petersburg first white, 3 × 11ft., £9 10s. to £9 15s.; 3 × 9ft., £8 15s. to £9; first yellow, 3 × 9ft., £12 5s. to £13; 3 × 7ft., £11 10s.; 2½ × 7ft., £12 10s.; ditto second yellow, 3 × 11ft., £9; 3 × 9ft., £8 5s.; 3 × 7ft., £7 10s.; Sandarne mixed yellow, £9 15s. to £10; Wyburg first mill-sawn yellow, £9 10s. to £9 15s.; Quebec pine, 12ft. 3 × 11in., first floated, £17; ditto dry floated, £18; ditto second bright, £13 15s.; ditto third floated, £9; ditto third dry floated, £9 5s. to £9 10s.

Lathwood per fathom:—Petershurg, £5 5s. to £5 10s.

Boards per customary square:—Dram first yellow, 8s. 3d. to 11s. 6d.; second yellow, 7s. to 8s. 3d.; first white, 7s. 3d. to 8s; second white, 6s. 9d. to 7s.; Fredrickstadt first yellow, 8s. to 13s.

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Trade News.

WAGES MOVEMENT.

Sunderland.—A meeting of the principal builders in the town was held on Thursday week to consider the request of the labourers for an advance of wages, and it was agreed to meet the men in a fair spirit, and offer them 21s. per week.

Sheffield.—The threatened strike of painters at Sheffield has been averted by the masters conceding e standard of wages which the men will accept.

TENDERS.

Cardiff.—For the erection of a new workhouse. Mr. E. W. Stephens, architect, Maidstone. Quantities supplied by Messrs. Batson & Hunt:—

Jones	£11,740
Biggs	10,429
Everill	10,400
Webb	10,200
Bevan & Son	9,753
Bolt & Son	9,666
Bird	9,599
Joues, Bros.	9,500
Moorland	9,400
Price	9,250
Wood & Sons	8,967
Smith & Pring	8,499
Miles	8,000
Wood	7,950

Chesterfield.—For a pair of semi-detached villas at Gladstone-road, for Mr. J. Marriott. Mr. S. Rollinson, architect:—

Maw & Waite (accepted)	£1272

City.—For rebuilding premises, Nos. 6 and 8, Bow-lane. Mr. Theodore K. Green, architect:—

Ramsay	£2164
Sewell & Sons	2133
Hill & Keddell	1997
J. M. Browne & Sons	1980
Henshaw	1937
Wicks & Bangs	1918
Browne & Robinson	1905
Scrivener & White	1892
Sharpington & Cole	1811
Goodman	1745

Clifton.—For building tower and spire of Emmanuel Church, Clifton, Bristol. Mr. John Norton, architect:—

Baker	£3883	8	4
Foster	3114	0	0
Thorn	3095	0	0
Wilkins & Sons	2790	19	0
Diment	2500	0	0

Hornchurch.—For restorations to church of S. Andrew, Hornchurch, Essex, exclusive of flooring and benching. Mr. Ernest C. Lee, architect. Quantities supplied by Mr. Riddett:—

Shearburne (accepted)	£1554

Kingston-on-Thames.—For the erection of church of S. John Evangelist, omitting upper part of tower and spire. Mr. A. J. Phelps, architect. Quantities supplied by Messrs. Franklin & Andrews:—

Cowland	£7325
Browne & Robinson	7100
Rider & Son	7090
Gibson, Bros.	7024
Myers & Sons	6966
Perry, Bros.	6824
Jackson & Shaw	6750
Tarrant	6728

Liverpool.—For the erection of a parsonage-house in connection with the church of S. Paul, North Shore, near Liverpool. Messrs. Troughtou & Prescott, architects:—

Greeuwood (accepted)	£1200

City.—For alterations and repairs at No. 47, Ludgate-hill and house adjoining, for Mr. J. H. Dunn. Mr. H. G. Gribble, architect:—

Sykes	£886
Blyth	850
Blackmore & Morley	832
Capps & Ritso (accepted)	804

Tring.—For taking down and re-building farm-house and offices at Gubblecote, near Tring, for the Dean and Chapter of Christ's Church, Oxford. Mr. F. Field, architect:—

Chapel	£674
Smith & Fincher	596
Small	594
Houer (accepted)	570

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CONTRACTS OPEN FOR BUILDING ESTIMATES.

Leeds, June 5.—For the erection of a new warehouse, in York-place. Stephen Ernest Smith, architect, 39. Park-square, Leeds.

Bradford, June 6.—For emptying, cleansing, and disinfecting all the middins, ashpits, privies, and cesspools in the said borough for a term of one, two, or three years. W. T. McGowan, Town Clerk, Town Clerk's Office, Bradford.

Moss Side Local Board of Health, June 3.—For paving and sewering and otherwise improving portions of Hultou-street, Great Western-street, and Greame-street. Chas. Lister, Clerk to the Board, 47, New Bailey-street, Salford.

King's Cliffe, June 5.—The trustees of the Law and Hutchenson's Charities are desirous of receiving tenders for converting certain premises, situate in the town of King's Cliffe, and county of Northampton, into schools, with master and mistress's houses attached. Kenuedy & O'Donoghue, Architects, Bangor and Glasgow.

Lancashire and Yorkshire Railway, June 13.—For the painting required at several of their stations. William S. Lawn, Secretary, Mauchester.

Hackney Union, May 31.—For the erection of certain lavatories and closets at the workhouse above mentioned. John Godwin, Clerk to the Guardians, Clerk's Offices, Hackney Union, Homerton, E.

Woolwich, June 7.—For the erection of an infirmary for Woolwich Union. Apply to Mr. E. B. Sargent, Clerk to the Guardians, Edward-street, Woolwich.

North-Eastern Railway, June 1.—For the extension of the goods warehouse, &c., at Wellington-street, Leeds. C. N. Wilkinson, Secretary, York.

Stockton and Middlesborough Waterworks Company, June 5.—For the construction of a large additional service reservoir at Fighting Cocks. Thomas Hall, Secretary, Central-buildings, Darlington.

Halifax, June 6.—For the erection of a Methodist New Connection Chapel, on the site of the present Salem Chapel, North Parade. Hill and Swann, architects.

Oxford, June 5.—For the supply of labour to be employed in the laying curb and paving stones and granite pitching in the footways and roadways within the district. Frederick J. Morrell, Clerk to the Board, 1a, S. Giles's, Oxford.

War Department Contracts, June 10.—For the performance of the work required in the shed between the two storehouses, at the Control (Military) Store Depôt, at Aldershot, in the county of Hants. Director of Contracts, War Office, Pall Mall, London, S.W.

Darlaston.—June 2.—For the restoration and enlargement of the Parish Church. Archd. P. Brevitt, architect and surveyor, Darlaston.

Sheffield.—June 8.—For the erection of New Schools, for the Parish of Gilcar. Locktou & Abhot, architects, 7, St. James'-street.

Devizes.—June 13.—For the restoration of Potterne Church, near Devizes, in the county of Wilts. Architect, Mr. Christian, 8a, Whitehall-place, London.

War Department Contract, June 3.—For the External Painting, &c., of the Union Hospital and Huts, near the East Infantry Barracks, at Aldershot.

Waterford Local Board of Health, June 1.—For providing and laying about 1,650ft. of 12in. and 9in. stoneware pipe sewers. John Sedgwick, Clerk to the Board.

West London District School, June 2.—For erecting about 1,000ft. of oak fencing, and pair of gates, for enclosing their land at Ashford, near Staines, Middlesex. Charles D. Hume, Clerk to the Managers.

Chichester, May 29.—For taking down a house in Canon-lane and building a new house on the site. Austin and Johnson, architects, Newcastle-upon-Tyne.

S. Martin-in-the-Fields, June 1.—For the supply of materials and the execution of jobbing and measured works required for the sewers and drains within the said parish. J. Daugerfield, Clerk to the Vestry, Vestry Hall, S. Martin-in-the Fields.

S. Martin-in-the-Fields, June 1.—For paving and repairing the footways and carriage-ways of the parish; also for the supply of broken Guernsey granite. J. Daugerfield, Vestry Clerk, Vestry Hall, S. Martin-in-the-Fields.

Ince Waterworks, May 31,—For the supply of the following articles:—Contract No. 1, 7,150yds. of 12in. cast-iron pipes, 1,200yds. of 8in. cast-iron pipes, 2,030yds. of 6in. cast-iron pipes, 800yds. of 4in. cast-iron pipes, and about 110 tons of 3in. pipes. Contract No. 2, also for the supply of all the necessary sluice valves, hydrants, &c. Robert Winstanley, Clerk to the Board, Local Board Offices, Ince, near Wigan.

Brighton, June 2.—For the construction of main and branch sewers. David Black, Town Clerk.

Edmonton Main Drainage, May 29.—For the execution of certain sewers and works required in connection with the main drainage of their district. William Pulley, Clerk to the Board, Edmonton, N.

Barnsley, May 30.—For the erection of a new station and warehouse, for the Lancashire and Yorkshire Railway. William S. Lawn, Secretary, Manchester.

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Do.	do.	12 by 7	1 18 6	13s.
Do.	do.	12 by 6	1 7 6	11s.

Prices of large Sizes, Cost of Transit, Reference Testimonials, and Sample Specimens may be obtained on application to

MESSRS. RANDELL & CO., Corsham, Wilts.

Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street, Westminster.

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BANKRUPTS.

TO SURRENDER IN THE COUNTRY.

Ensor, Francis, West Bromwich, engineer, June 12, at Oldbury.—Stevens, William Dixon, Hull, builder, May 29, at Hull.

PUBLIC EXAMINATIONS.

June 6, J. Pearse, Torquay, builder.—June 6, C. C Mercer, Teigumouth, builder.

SITTINGS FOR LAST EXAMINATION.

May 30, R. Marrable, Forest-hill, builder.—June 8, G. J Moor, Asylum-road, Old Kent-road, plumber.

DIVIDEND MEETINGS.

June 16, B. Hughes, Wall Heath and Kingswinford, brick and tile manufacturer.—June 16, T. and W. Short, Birmingham, Nottingham, and Cheltenham, timber merchants.—June 6, B. Carter, Ribbesford, Worcestershire, timber merchants.

DECLARATIONS OF DIVIDENDS.

J. Brockbank, Carlisle, timber merchant. div. 2s. 6d.—W. White, Poole, builder, div. 1s. 6d.—F. W. Monk, Davington, near Faversham, brick dealer, div. 3s. 3d.—S. Keetch, Holloway, carpenter, div. 4s. 4d.—A. Palmer, Hadlow, Kent, carpenter, div. 2s. 6d., any Tuesday.—R. Wrigley, Oldham, builder, div. 3s. 10d.

PARTNERSHIPS DISSOLVED.

Lipscombe and Tee, Redhill, Hants, brick manufacturers.—T. and H. B. Birmingham, Broadclist, Devon, builders.—Jowett and Nicholl, Halifax and Brighouse, contractors.—Sutcliffe, Dearnley, and Blakley, Huddersfield, contractors.—Wilkinson and Helm, Pendleton, near Manchester, builders.—Knell & Son, Stafford-place, Wyndham-road, Camberwell, Amery's-place, Smirk's-road, Newington, and Walworth-common, builders.—Brickles and Son, Woodbridge, bricklayers.—Crammond and Faulds, Cleator Moor, Cumberland, engineers.—Whitworths and Higginson, Birmingham, plumbers.—Orr and Birtwell, Hatton-garden and Bristol, iron merchants.—Ommanney and Tatham, Salford, engineers.—J. and J. Siddons, West Bromwich, iron-founders.

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The Column in the Place Vendôme is to be rebuilt, if the *régimé* of M. Thiers lasts long enough.

The London and North-Western Railway Company are to place a statue of George Stephenson in Eustou-square, London.

Small-pox, Fevers, and Skin Diseases.—The predisposition to is prevented by Lamplough's Pyretic Saline. Agreeable, vitalising, and invigorating, its effects are remarkable in their cure and prevention. Take it as directed. Sold by chemists and the maker, H. Lamplough, 113, Holborn-hill.—[Advertisement.]

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD.							
Pig—Foreign	per ton	£17	17	6	£18	0	0
„ English W.B.	do	19	15	0	20	0	0
„ Lead Co.	do	19	0	0	0	0	0
„ Other hrands	do	18	5	0	18	10	0
Sheet Milled	do	18	15	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or minium	do	20	10	0	0	0	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry.	do	25	6	0	0	0	0
„ ground in oil	do	0	0	0	0	0	0
COPPER.							
British—Cake & Ingot	per tou	71	10	0	72	0	0
Best Selected	do	73	0	0	74	0	0
Sheet	do	74	0	0	77	0	0
Bottoms	do	79	0	0	0	0	0
Australian	do	72	0	0	75	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	0	0	65	10	0
„ Refined ingot	do	70	0	0	72	0	0
Yellow Metal	per lb.	0	0	6⅝	0	0	7¼
IRON.							
Pig in Scotland, cash	per ton	£2	17	0	£0	0	0
Welsh Bar, in London	do	7	5	0	7	10	0
„ Wales	do	6	12	6	6	15	0
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	15	0	7	0	0
Sheets, single in Londou	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	10	0	7	15	0
Swedish	do	9	15	0	10	0	0
TIMBER.							
Teak	load	12	5	0	13	0	
Quebec, red pine	„	3	15	0	4	15	
„ yellow piue	„	4	5	0	5	5	
Quebec oak, white	„	6	0	0	6	5	
„ hirch	„	3	10	0	4	15	
„ elm	„	4	0	0	4	10	
Dantzic oak	„	4	15	0	6	15	
„ fir	„	2	10	0	4	10	
Memel fir	„	2	10	0	3	10	
Riga	„	3	5	0	3	10	
Swedish	„	2	5	0	2	15	
Masts, Quebec red pine	„	4	0	0	6	10	
„ yellow pine	„	4	0	0	6	10	
Oregon	„	7	0	0	9	0	
Lathwood, Dantzic, fm.	„	3	0	0	5	0	
„ St. Petersburg	„	5	5	0	5	15	
Deals, per C., 12ft. by 3 hy 9in.,							
Quebec, white spruce	„	12	10	0	18	0	0
St. John, white spruce	„	12	10	0	14	10	0
Yellow pine, pr reduced C							
Canada, 1st quality	„	18	0	0	19	10	0
„ 2nd do	„	13	5	0	14	0	0
Archangel, yellow	„	12	10	0	14	10	0
St. Petersburg, yellow	„	13	0	0	13	10	0
Finland	„	7	0	0	8	0	0
Memel and Dantzic	„	0	0	0	0	0	0
Gothenburg, yellow	„	8	10	0	10	10	0
„ white	„	8	10	0	9	10	0
Gefle, yellow	„	10	10	0	12	10	0
Soderham	„	8	10	0	12	0	0
Christiania, per C., 12ft. by 3 hy 9in., yellow	„	10	0	0	12	10	0
Other Norway	„	7	0	0	8	0	0
Flooring hoards, pr square of 1in., first yellow	„	0	9	0	0	10	0
First white	„	0	8	0	0	9	0
second qualities	„	0	6	0	0	8	0
OILS, &c.							
Seal, pale	per tun	37	10	0	0	0	0
Sperm body	„	82	0	0	0	0	0
Cod	„	35	10	0	0	0	0
Whale, South Sea, pale	„	34	0	0	0	0	0
Olive, Gallipoli	„	48	10	0	0	0	0
Cocoanut, Cochin, tun	„	50	0	0	0	0	0
Palm, fine	„	37	0	0	0	0	0
Lins	„	31	15	0	32	0	0
Rapeseed, Eng pale	„	44	10	0	0	0	0
Cottonseed	„	27	0	0	32	0	0

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WILLIAM J. VIAN, Secretary.

ROYAL POLYTECHNIC.—WHITSUN HOLIDAYS.—Professor Pepper's "Trip to the Western Highlands of Ireland;" grand Scenery and Irish Songs by Miss Barth.—Great Revival of Henry Russell's Songs, under his personal kind superintendence, with grand Scenic and Optical Effects. Vocalist, Mr. Plumpton.—J. L. King, Esq., "On Muscle and Muscular Power," illustrated by Herr Willio, the wonderful Contortionist and Imitator of Birds and Animals.—Re-engagement of E. D. Davies, the Premier Ventriloquist.—The Ghost and other Entertainments as usual.—Admission One Shilling. Open from 12 to 5 and 7 to 10.

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Physician—Dr. BARR MEADOWS, 49, Dover-street, Piccadilly, W.

New Patients are admitted at 227, Gray's-inn-road, King's-cross, W.C., on Thursdays—Morning at Ten, Evening from Six till Nine.

Also at the City Branch, 10, Mitre-street, Aldgate, E.C., on Wednesdays. Same hours.

Average number of patients under treatment, 1,000 weekly. THOMAS ROBINSON, Hon Sec.

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THE BUILDING NEWS.

LONDON, FRIDAY, JUNE 2, 1871.

THE WRECK OF PARIS.

PARIS is wrecked! The monumental city of Europe has fallen, amid terror and barbarism. It is hardly possible, at a glance, to compass the ruin which has been made. The great and stately pillar in the Place Vendôme—a hollow column of stone, encased by a skin of bronze—has gone down; the historical Tuileries is burnt; that fairy-like Sainte Chapelle has vanished; the Hôtel de Ville and the Hôtel de Diêu remain only in fragments; the Louvre has been battered out of its new beauty; Notre Dame has had a bare escape; the Luxembourg is blown up; all those splendid architectural streets, which were the pride of the Imperial capital a few months ago, are shattered, defaced, and mutilated beyond recognition. Paris has lost, within a month, more than centuries have built, more than Imperialism, Royalty, or Republicanism can ever—did it last a thousand years—replace. Let us glance at the public works of the Third Napoleon, and, connecting them with the works of the past, see what these patriots of the day have done. No sovereign, certainly, ever rivalled him in the magnificence, extent, and utility of his improvements. The most vast was the junction of those two unparalleled palaces, the Tuileries and the Louvre, completing an edifice unequalled in the world, though now mangled and dilapidated, to the perpetual shame of France. The old Louvre, or Louveteriè, a quadrangular building, with conical capped towers, similar to those which crown the opposite Concièrgerie, was demolished by Francis I., in 1528. But that was the so-called time of chivalry, when ladies were not welcome at court. Upon a change of manners, a change in architecture took place; there were wide staircases, sumptuous halls, lofty windows. Grand galleries were built for noble promenades; but the first Bonaparte, all-powerful though he was assumed to be, did not succeed with his idea. Between the Tuileries and the Louvre lay a broad debateable ground, occupied by the vast hotels of the Dukes of Longueville and the Elbœuf family, and the stables of the Dukes of Orleans. Napoleon III. cleared away these obstructions, opened up the Place Vendome, linked the Rue de Rivoli with the Boulevards by a series of brilliant streets, and erected splendours incomparable. There never reigned, as we have said, a monarch since Augustus who felt a deeper sympathy with the architect. He carried a double line of galleries between the Tuileries and the Louvre, sweeping away every impediment. But the Tuileries—a ruin now—calls for more particular notice, in its devastation, than even the great Palace of Pictures itself. No edifice in Europe was more truly palatial. Those buildings enclosing the square of the Carousel engaged one hundred and fifty-five sculptors for several years upon their external decoration alone. What must have been the lavishment of beautiful work in the interior? And what the ferocity which has destroyed it all—the noble Pavillon de Rohan, with its graceful watch-tower; the grand façade of the Imperial Library; the mighty Hall of the State, a mass of marble and gilding, upon which four thousand masons and decorators worked for a year; all have disappeared, sacrificed to the savage passions of an ill-inspired mob, which will one day regret what it has done. The madness that prompted this destruction is utterly unintelligible. We can understand the overthrow of Imperial and Royal effigies, offensive to some sentiment of the hour; but why dethrone the typical representations of Lyons and Strasbourg, Havre and Marseilles? Whatever else he did, the Emperor Napoleon changed from ugliness into nobility many a Parisian aspect, as did his predecessors; the grounds of the Capucin Friars into the sparkling Rue de la Paix; the Jacobin and Feuillares into the Rue Rivoli, beloved of Englishmen; the mouldering Abbaye of S. Martin into the Conservatoire des Arts; the hideous old Nunnery of the daughters of Magloire into the spacious Rue Rambuteau. The exquisite tower of S. Clotilde rises where the Convents of Bellechasse and the Carmelites used to darken their neighbourhood; or, we should say, rose, for it has fallen amid the fires of the Commune. The Market of the Carines, where, in 1793, the priests were massacred, has been resumed for its original purpose. The obelisk "of Pity," which stood where the guillotine was erected "for permanent use," has fallen. The Covent Garden of Paris—the Market of the Innocents—innocents much to be pitied in these early days of June—was turned into a fortress by the insurgents, and its railway carried out guns instead of butter. However, a restoration is promised; and, while noticing this point in the ruined architecture of Paris, we may as well observe that the arches of the underground halles or markets, which are only one brick in thickness, and each of which springs from four iron pillars, exhibit a most remarkable appearance; the weight they support is almost incredible to an unscientific eye. But we are referring now more particularly to the recent devastations. In nothing has the municipality of Paris, notwithstanding its irreligious traditions, been more liberal than in the construction and decoration of churches. Besides the Madeleine, which the first Napoleon built—less, however, as a sacred edifice than as a temple of glory—the enrichments of S. Clotilde, S. Vincent de Paul, Notre Dame de Lorette, Notre Dame de Paris—Victor Hugo's Notre Dame—and S. Geneviève, all destroyed or mutilated now, have added to the pride of the ancient capital which not time, or wealth, or love can ever restore. Parisian artists were filling with ornament every niche of S. Eustache—that Gothic jewel—when the reign of sacrilege began; and S. Roch was about to enjoy a rejuvenescence when the hideous anarchy stripped its altars and defiled its walls. Now, let us see what Paris has lost. The Tuileries has been the principal sacrifice. It was more than three hundred years old; its façade — a thousand feet long—was incomparably the finest in Europe; in gorgeousness of decoration its interior was equally unsurpassed. In fact, not even the Hall of Apollo, in the Louvre—dazzling though it be—approached the Hall of Marshals, with its clusters of busts and portraits, its Spartan Caryatides, its ceiling of mythology, its wondrous chimney-pieces in marble yellowed by time, and its dainty little chambers, in any of which the Goddess of Love might have forgotten her Immortality. It has vanished, and can never be restored; but what a revolution! Paris without the Tuileries! Imagine London without Westminster Abbey, St. Paul's, the Houses of Parliament, the Nelson Monument, Regent and Oxford-streets, and the Marble Arch, and an idea may be formed of the disaster which has befallen the once proudest and to-day the most pitiable city of the earth. There is consolation, however, in the fact that the Louvre has been spared. It was the second Vatican of Europe. The Vatican itself, though on a larger scale, was not to be compared with it in point of architectural splendour—though Sir George Head thought otherwise—and as for its contents, they were unparalleled and priceless. Why, the stooping Venus, the Venus of Milo, the Psyche, the Venus of Arles, the Wounded Amazon, and the Ariadne were sufficient to satisfy all human taste if the art of sculpture no longer existed. The pictures, of course, which the Communists were eager to destroy, are almost above admiration—a phrase justifiable, perhaps, if we refer to the Last Supper, the Marriage in Cana, Murillo's Assumption, the Salutation of Mary, and Lot attended by the Angels. The architecture of this edifice is of the grandest type. Not so much is to be said of the Luxembourg, though we have always found delight in its quaint chambers, not unlike those at Fontainbleau and Hampton Court, but infinitely more ornate. It was in imitation of the Pitti Palace at Florence, and so far successful that it did not resemble the original in the least degree, being a mass of rustic masonry, with a fanciful clock-tower, and a painted court, such as may be seen in Munich, and galleries aflame with the signs of the zodiac in gold and crimson. The Commune must have been carried back in memory, when it blew up this building, to the days when Marshal Ney was shot in the garden behind it, which is, at present, dedicated to students, damsels, and the *can-can*. Passing along, we doubt whether Mr. Ruskin himself could describe the luxury of La Sainte Chapelle—perfect as a shrine: the artists must have been worshipping while they reared it. It is vain, at this time, to deplore S. Cloud. The old Palace of the Bishops of Paris is irretrievably wrecked—a mere shell, though never to be blotted out from French history. There Henry III. fell by the hand of Jacques Clemart; there Henrietta of Orleans, daughter of our First Charles, died in the agonies of poison; thence the famous five hundred were expelled by Napoleon I.; and there was Queen Victoria lodged in 1855—only a few fractured and tottering walls remain. The Hotel de Ville, again, is a terrible loss, in point of architecture, to Paris. We commonly hear of it as a new structure, not historically interesting. The contrary is the truth. You may touch stones beneath that frescoed roof which were laid in the earliest years of the sixteenth century. All Parisian history—as told so vividly and remorselessly by the Parisian Dulaure—groups itself about that pile of art and allegory. The first Commune—that of even a bloodier memory than the last—held its assemblies there. The rooms in this building were the most brilliant in all brilliant Paris; they accommodated thousands of guests; it took five thousand tapers and a hundred chandeliers to light them for banquets or a ball. The place of Parisian festivity is a mound of ruins and ashes. Indeed, only two familiar localities appear to have been intentionally spared—for Notre Dame was saved by accident—Père la Chaise and the Morgue. This is history, with a vengeance, commenting upon itself.

OIL PAINTINGS AT THE EXHIBITION OF THE ROYAL ACADEMY.

Second Notice.

IN taking up our criticism of the oil pictures of the Royal Academy where we left off in gallery IV., we are insensibly reminded of the last occupants of the room—namely, the fine works by the Dutch painters hung here in the winter during the Old Masters' Exhibition. It would be hard, indeed, for our modern English school to enter the lists with such wonderful masters of execution as the Dutch painters; and yet there is one point in the English execution which gives us hope for the future of the school—namely, its variety, and the many different ways by which the painters strive to get at their effects. This is in great contrast to the larger number of the artists of the French school, who aim in their work at a grand *coup*, and strive to paint by a happy onceness, thus giving, in successful cases, a *verve* and dash to their pictures very taking when first seen, but when practised by so many apt to pall upon the taste. We doubt, too, if this method of painting, though it certainly conforms with the spirit of the age, and as such will be admired by many among us, has been followed by the very greatest colourists of past times. Did not Ostade among the Dutchmen, and the Venetians, with Titian at their head, get their luminous flesh tints, and varied and brilliant colouring, by many different grounds prepared for after-glazings and scumblings, and delicate manipulations of colour. And can we doubt that their method if properly pursued would be more effective than the dash system now so largely obtaining among the admirers of the French school? We believe not, but then we also believe and hope that English artists will continue to try both ways at least, and, by varieties of method, stir up one another to continued efforts after what is best. A work almost Dutch in finish, and a quaint and clever conception, while as a piece of quiet colouring it is extremely effective, is No. 241, "Friends," by Eyre Crowe. The different aspects of the backs of the staunch old Quakers waiting for the spirit to move them in their particularly ugly meeting-house are given with comic minuteness. As the painters would say, Mr. Crowe has made a hit by this work. It will raise his reputation, and give him a fresh start in his profession. We are glad to meet with another work by Fagerlin, for we remember his picture called "Jealousy" with so much pleasure. In No. 250, "Grandparents' First Visit," the painter shows the same appreciation of rustic life as formerly. He paints truthfully and carefully, and his details, though kept subordinate to the whole, are worthy of attention. The actions of the grandparents are very characteristic—observe the wonderful bonnet of the old woman, and the complacent attitude of the father of the baby, who stands at the left hand of the picture grinding the coffee. Another picture of much comic humour is "Robbers Dividing the Plunder," No. 251, by the veteran Academician Webster. Three boys are sharing some very green apples stolen from a neighbouring orchard. One of them, who has begun to try the taste of his ill-gotten gains, contradicts, by his facial contortions, the well-known proverb that "stolen goods are sweet." Mr. Wells has a good portrait in this room of Mr. Buxton, M.P., who must be rather a difficult subject to paint from. Mr. Storey's "Lessons," No. 277, is full of light, but the faces of the children are rather carelessly finished. "The Hill at Norwich—Market Day," by F. B. Barwell, is, in choice of subject, above the average, and in painting a great improvement on this artist's usual pictures. The picturesqueness of the background contrasts well with the plain but comfortable red brick houses in the middle distance. The cattle in the foreground are "lean kine," and as such not beautiful to look upon, but we believe that such stock only are sold in the Norwich market. Mr. Poole's beautiful picture of the "Death of Imogene," No. 312, occupies a central position in the gallery. It is a work full of tender poetical feeling. There is a charming simplicity in the actions of the two youths who bring flowers to strew over their sister. Her position implies rest after utter weariness, and her figure is a capital bit of foreshortening. The subdued sunlight of the picture is very charming. A curious contrast to this work is "The Somnambulist," No. 313, by Millais, a girl walking along the cliffs in her nightdress, on which the moonlight is streaming. Her face betrays a sort of weird dreaminess, but it also might have been painted from a particularly stupid person. Mr. Sant's diploma work, "The Schoolmaster's Daughter," finds a place in this gallery. There are also several small pictures of great merit. Two very good works by Frere; No. 306, "A Sketch," by Biller; No. 321, "Housekeepers Alarmed," by F. D. Hardy; and No. 259, "Mustering for a Raid Over the Border," by F. Weekes, are all worthy of study. Perhaps the most important work in Gallery V. is No. 359, "Contadine in S. Peter's, Rome," by K. Halswelle. Though rather too scenic in treatment, it is powerfully painted, with feeling for brilliant colour. The peasants betray more surprise than reverence for the sacred edifice. Mr. Halswelle has omitted the sentiment, and confined himself to the exterior rendering of the subject. No. 348, "A Rainy Day," by Peter Graham, is very clever indeed; but we rather agree with an unknown critic behind us at the Academy, who pronounced the picture "too wet to hang in one's room." "The Course of a Lover Never Runs Smooth," No. 428, by H. B. Roberts—a young man in the costume of the beginning of the century, carrying a large nosegay to his mistress, pursued by some geese, and vainly endeavouring to frighten them away with his umbrella—is well painted. Mr. Pettie's principal picture, No. 501, "Scene in the Temple Garden," finds a place in Gallery VI. It is rather uninterestingly treated, and though the painter has given good expression to the faces of Warwick and Somerset, as a whole the work is not impressive. No. 406, "April Skies," by Vicat Cole, is essentially refreshing to look on. It is painted with great vigour, and is thoroughly English in feeling. Another original work is No. 490, "A Chapter from Pamela," by G. H. Boughton; the figures are graceful, and the clover field capitally painted. No. 472, "The Daily Governess," by J. Green, is a small work, but has much to recommend it in its truthful treatment. On entering the next gallery a sort of surprise awaits us, for here all the light pictures have been placed together. It is a matter of doubt whether this is the right plan, but we think, on the whole, it is the best one for those works painted in a light key, as they do not harm one another, and one alone here and there upon the walls of the Academy is apt to look flat and poor, while at the same time it tells upon the eye as a spot and takes the colour out of any dark picture placed near it. Perhaps the most talented painter of this scale of colour is J. C. Moore; he contributes two graceful figures, one in pale blue drapery, the other in light sea green, entitled, "Battledore," No. 597, and "Shuttlecock," No. 601. Both are eminently suited for decorative purposes, but with faces carefully finished and delicately wrought. Between these figures is placed Mr. Barclay's principal work, No. 598, "The Steps of Ana Capri," as steep as Jacob's Ladder, with the peasants going up and down. The same artist has another clever work in this room, a snow scene, some girls feeding deer from the steps of a Tudor house; the deep colour of the red bricks against the snow is capitally given. We have not much sympathy for Mr. W. B. Richmond's large work, "Bowl-players;" it is decorative and uninteresting. Of course it is talented, but who would care for it in a room? This painter has a very good portrait of Lady F. Cavendish, No. 530, which gives us far greater pleasure as a bit of painting than his more ambitious picture. Mr. Brett sends two of his eccentric landscapes, executed seemingly with the point of a pin as to finish. His largest work, No. 522, "The British Channel, seen from the Dorsetshire Cliffs," displays nothing but a fine bit of sea, most intense in colour, with a fine expanse of sky. Another landscape of quite a different calibre, but very good in colour, is No. 555, "The Milkmaid's Song to Isaak Walton," by W. Field. The pleasant flat meadow, reaching away to the river, and the old angler with his companion sitting under a tree, listening to the pretty girl's song, make up a charming idyll of rural life. Mr. Hayllar's picture, No. 557, "The Eve of the Wedding," is a very crude bit of colour and vulgar in feeling; we expect better things from him. No. 561, "At the Shrine," by C. Henry, is clever, but too close a copy of the art of the Belgian painter, Baron Leys. Mr. Henry displays more originality in his landscapes. In the tenth room Mr. Millais has the portrait of a lady made into a subject picture by its title, "Yes or no?" Mr. Israel's picture, called "How Bereft!" the coffin of the father of a family being carried out of the cottage door, leaving his weeping family to silent despair, has all the pathetic qualities in it for which this painter is so justly famous. No. 1036, "Among Our Ancestors," by G. Kilburne, a lady showing the old family portraits to her little son, is well painted, and nice in colour Mr. D. T. White has found a very good subject in "Dr. Johnson at Rehearsal," No. 1079, and has carried it out in a conscientious manner. No. 1049, "Come Back," by Briton Rivière, is very touching. The faithful old dog welcoming back the poor fallen girl is excellently painted. Mr. Robert Leslie has a very capital bit of sea in this room, No. 1085, "On the Thames, Erith Reach;" he has caught the passing swell of the waves just as a steamer has gone by. No. 1096, "Gold," by A. H. Tourrier, is a clever work. The Lecture-room, second only in size to the great room, contains many important works this year. The centre of one side is occupied by Mr. Linnell's fine landscape, No. ·1119, "Shelter." Over this is placed Mr. Orchardson's large picture "In S. Mark's, Venice." Though well acquainted with S. Mark's, we cannot make out either the point of view the artist has chosen or the perspective. He has also failed to give the sort of gloomy grandeur of the colour of the roof. No. 1118, "Cleobulus Instructing his Daughter, Cleobouline," by Mr. Leighton, is very beautiful in colour, and has the reality of truth impressed on it. Doubtless the interior has been painted from some modern Greek house. The girl is altogether charming. Mr. Calthrop's picture, No. 1113, from *The School for Scandal*, "A Wine Party," though an unpleasant subject, is very carefully painted. "A Surrey Sunset," by J. C. Adams, though placed too high to be well seen, is a landscape of more than average merit. Mr. Watson may also be congratulated on his truthful and conscientious little picture, No. 1143, "Cottage Exterior, Surrey." Mr. B. Rivière has some qualities in common with Landseer, one of them being his power of giving almost human expression to his animals without detracting from their merits as animals. Observe the different characters of the swine. In No. 1156, "Circe and the Friends of Ulysses," each one has an individuality of its own, and may be examined separately. The one failure in the picture is Circe; she looks like a little village maiden rather than an enchantress. There is a want of elevation about her figure generally which mars the effect of an otherwise very clever work. M. Hébert's grand picture, "The Morning and the Evening of Life," is painted with great vigour. It should be carefully studied by English art students, for there is something almost solemn in its conception. Another very powerful conception is the new Associate, Mr. Walker's picture, "At the Bar," a woman waiting to hear her sentence with a dreary and almost hopeless expression of countenance, and a jailor nearly overcome by weariness below. Though painted on rather too dark a scale, and from this circumstance seen with difficulty in an Exhibition, it is a fine and original picture, and displays Mr. Walker's varied powers from its very difference from his other works. Among other clever pictures in this room are No. 1160, "An Arab Patriarch," by J. E. Hodgson; No 1172, "The Guide," by A. H. Tourrier; and No. 1173, "The Betting Ring," by H. C. Selous.

ALBERT DURER, AND HOW TO WORK IN HIS WAY.

In this number of the Building News we present our readers with a perfect *fac simile* of one of the great engravings of Albert Dürer. It is given with the twofold object of showing to the art public the true value of original hand-work by the artist himself, and for the purpose of affording to the art student a few hints on drawing. This fine engraving is remarkable in many ways, from the size and importance of the figures, from the inventive power shown in the accessories, and from the strange and mystical way in which the idea sought to be represented is carried out. It is worth all the attention which the student of art can give to it, and we propose to offer a few hints as to how he may profit by the study of it We can only guide the student for a little space on his way, by comparisons with other artists' works, and by hints to him as to what he should himself do, and how he should, as we think, best go to work to do likewise. Let us remind him that this is *bonâ fide* work, and that Albert Durer himself is the teacher.

The subject of the drawing, as all will at once see, is from the Apocalypse of S. John, and it realised to the mind of Dürer the vision seen by the Apostle, and described in the First Chapter of Revelations, from the 12th to the 20th verses. Nothing can be more literal than his rendering of the sacred text. The "Son of Man," with the sword proceeding out of his mouth, and holding in his left hand the Book, and in his right the seven stars. There is the long robe, and the golden girdle, and the feet as of fine brass. The "flame of fire" from the eyes is beyond painting and drawing, as much so as "the sound of many waters," which were heard as proceeding out of his mouth. The kneeling figure of the Apostle as he turned to see the voice that spake with him is finely managed, and the expression of the face, though the lines are rough, worth careful note, and perhaps comparison with those noble heads of Apostles by Giotto, in the National Gallery. Modern painters, for some reason or other, never seem to be able to get a true reverential and devotional expression of countenance. Nothing can possibly surpass the Giotto heads in the Gallery picture. The seven golden candlesticks must have been a real labour of love to Dürer, as nothing seems to have delighted him more than the minute and detailed representation of material and common objects of all kinds, as workmen's tools, parts of houses, objects of metal work, models of geometrical figures, and as much and more than all, perhaps, groups and clusters of foliage, such as are seen here in the feet and capitals of these seven mystical, though palpable, candlesticks. The throne, and the sea of glass, and the clouds, are all here in palpable realisation, everything perfectly and thoroughly made out, and capable of being counted; but whether this be the best way of representing such a scene may be a question for the curious. It may be contrasted with what Rembrandt did with such visions, wherein nothing definite can be made out, and where all seems to be dream and mist. But we must take it as it is, and think of it as Albert Dürer's Apocalyptic vision; the vision as he saw it, and as it presented itself to his mind's eye. It shows the infinite value, too, of *bonâ fide* personal work and artistic hand-writing, for in it we can see precisely what Dürer saw; he has here sketched his vision for us. It need hardly be said how thoroughly German it is, and how differently an Italian, with an equally realistic mind, would have drawn such a scene, and how changed the faces and the draperies would be, and the whole of the minor accessories. How different, again, would a French picture of the vision have been, and still more so a genuine Jewish one of the selfsame subject. We should be travelling away from the practical application of the drawing by further remarks on this most interesting theme, but it has often struck us what a pity it was that the Jew was not a painter as well as a poet—what might he not have shown us? The Bible is a Jews' book, and it is really as impossible for any other man to represent adequately a national Jewish scene as it is for anyone but a Jew to talk Hebrew. If truth must be told, this is not the vision of the Apocalypse as seen by a Jew, but a matter-of-fact scene in the eye of a great German artist. The faces, clothing, furniture, metal work, sea, clouds, and all, are German, not Jewish. No man but a Jew has ever yet passed the limits of the highest genius into inspiration—not Homer or Dante, Milton or Shakespeare, in the realms of written words. What might he not have done on a wall surface? But our object is in this place to make some practical use of this fine drawing, and how best to profit by the study and, may be, the careful copying of such a work as this. The copying of Albert Dürer has been strenuously urged on students by Ruskin and other authorities in art; but the subject seems hardly, as yet, exhausted, and a few further hints may perhaps prove useful, for it is quite certain that did no other work exist enough might be got from it to guide the student in his first efforts to draw common objects, and the "figure" as well. We say this because we feel it impossible to agree with Mr. Ruskin and some others in their recommendations to go to work and copy as much as possible of Albert Dürer's drawings for the purpose of getting at a good method of work, and at an exact method, and at a fine and noble pencil or ink line, at superlative figure drawing, at fine expression of form and face, and at mastery over detail; and Mr. Ruskin goes so far as to recommend in his book on drawing, that it is well for the student to carefully make copies, literal copies—of complete plates and woodcuts, such as that herewith published, for the purpose of attaining, as far as may be, these great and desirable ends. But there is surely one thing that he has omitted to notice in his apparently excellent system of teaching the art and mystery of drawing, and that is, that each individual artist, whether student or master, has, perhaps, unconsciously to himself, a method of his own, and one peculiar to himself, and which, therefore, makes it almost, if not quite impossible, for him to adapt himself to the ways and methods of other men, however eminent they may be. In our own experience we were often asked by those who were beginning to learn to draw, and we may fairly boast of having had to do with pure "beginners," "What kind of line shall I try and draw?" and we always replied, "Why, your own line, just the line that comes naturally and easily and instinctively to you, and without effort." Strange as it may seem to many who have not thought of the subject, it will be found in a class of draughtsmen, mere learners of drawing, that no two of them will be found to draw with a lead pencil, or a pen, the same sort of line, with the same feeling and character in it. All the lines drawn by the students or workmen in a class of this sort, purely elementary as it is, will be found to differ, and nothing is more singular than to find so much of difference in so simple and common a fact, for it would be very naturally thought that by students in so elementary a stage of work as that to which we now refer, that all they did would at least be alike, and remarkable for nothing so much as sameness and likeness; but it is far different—indeed, just the reverse of it, for the faces of those who draw these simple forms are not more unlike each other than are the straight and crooked lines they draw on paper or wood panel. For this reason it is, therefore, that we would not recommend, as Ruskin has done, any student reader of the BUILDING NEWS to go to work and try to copy this drawing of Albert Dürer's, fine as it is, and worthy of any amount of time and pains in the effort to copy it or reproduce it, for he will find that it is impossible for him to do more than get at the general forms, and perhaps, expression to a certain extent, of any one individual form and figure in it, and that to draw it line for line, as Dürer has done, and to get the precise character and feeling of his line drawing, is quite impossible. It would be not a little curious to go to work with a class of Royal Academy students on a really rational system of art instruction, and to see how oddly the results would come out, and how very different from what might be expected, and how Albert Dürer, if he were one of such a class, would but, after all, do his work, great as it is and masterly, in his own way; and they, his fellow students, would do the same work in their own way, far inferior though it might be. Thus to try to make practical use of this very plate, which the student is desired to study earnestly, and to look at again and again, take one of the candlesticks as a simple matter and easily intelligible, and let us suppose that a number of students, and let us add ordinary workmen, should have before them to copy and make a drawing of, a real candlestick, just as is seen in this woodcut, and let pen and ink be the means by which the drawing is to be made, the drawings all of the same size and to the same scale, and the utmost pains taken in the endeavour to represent on paper this object. Next take any part or a few folds of the drapery of the figures, and let the same class of students go to work and make careful copy of a fold or two of real drapery or portions of a dress as it hangs naturally from the body. Let the class, we say, go to work, and each one in his own way try to copy this bit of simple drapery, using a line of his own and natural to him, and a mode of showing shadows of his own, and of leaving the lights, and it will very soon be found that all these divers modes of drawing drapery are different; and that though the piece of drapery be precisely the same, the drawings are all of them different and unlike each other, and that no two of them are the same in character or feeling. It is the same object, but differently rendered, according to each one's powers and peculiarities of mind and powers, and peculiarities of hand. In truth, this fine drawing cannot be looked at too long; and the longer it is looked at the more the student will think of it, and of the capacity, and genius, and individuality of its great draughtsman. We might say much on the way in which the light and shade is managed, and a certain effect of distance shown, and might challenge the class to try and do likewise, in some way or other, each student in his own way; and might note, too, a number of other little details which can only be appreciated by those who study the drawing with earnest attention and comparison with their own efforts. But we must forbear. But to prove, as far as possible, the truth of our view of the matter, and to show that it is not by the making of literal copies of Albert Dürer's works and drawings, but by the student making his own drawings in his own way—for that is the point and gist of the whole matter—we would refer him to the admirable line drawings of Hollar, particularly to one which we hope to be able to present to the readers of the BUILDING NEWS in *fac simile*, and thus to show that as a line draughtsman, though inferior to Dürer, he is not a little worthy of study, and valuable beyond price as showing us so much of what was done in London town before the destruction of the tumble-down architecture of it commenced. Old Hollar was a real artist, as much so as Albert Dürer, though in a different way, and it may well be doubted whether a better master of "architectural drawing," pure and simple, could well be found. The drawing we refer to is a bit of "Old Westminster," now pretty nearly gone. The student should compare the works of the two artists. There is yet one other artist, though of lesser note, to whom we would here refer, and to whom a vast debt of gratitude is due, for he has preserved to us a recollection of the interiors of our cathedrals, and the several parts and details of them as they existed before the modern mania for their "restoration" set in; we refer to that admirable draughtsman, John Carter. It is impossible not to find instruction in the comparison of these three great artists—Albert Durer, Hollar, and John Carter—so different from each other, yet, in a certain sense, so alike, for each one has preserved for us the remembrances of things now passing, or already utterly passed away, and that not in mere engravings and woodcuts in the formal and art-manufacturing way in which such work is now-a-days sought to be done, but in their own way, and in their own art hand-writing. To our minds, the drawings of John Carter, as representative of Gothic forms and mouldings and in worn materials, have never been surpassed, or, indeed, equalled. Let us name one of them, the York Chapter-House Doorway, as seen from the passage leading from it into the cathedral. This drawing is, indeed, melancholy as it is to say it, the sole record of how the said doorway and doors looked before it all underwent the modern restoring process. As a line drawing, it is admirable; the mouldings are shown as they exist, and the doors and iron hinge-work show as they were before the coats of varnish hid alike both wood and iron, and before the top of the doors under the pointed arches were destroyed or buried in the crypt. There is no better master of Gothic drawing than John Carter, and what Dürer did for the quaint work of Germany, Hollar and Carter did for the Gothic work of England. No more instructive exhibition could be got together than that of a fair collection of the works of these three great artists, each so good and true in his own way, so impossible to copy, but so useful, as showing how you can accomplish the same thing in a different way, and as proving that no two artists are exactly alike, and no two "lines" by different men are the same in character, feeling, and expression.

In the hope of being able to return to this important subject—the more important now than ever before—we will but give the dates of the several drawings we have named. The Albert Dürer woodcut here presented to the reader is of about the date of 1506; the etching, by W. Hollar, of the river and buildings on its bank, Westminster Hall and Westminster Abbey in the background, 1641; and the etching, by J. Carter, of the York Chapter-House Doorway and details, 1813; so that we here see that artistic talent is never confined to one age or century, but manifests itself in all, and that two attendant circumstances are alone required for its true development and action: first, there must be a certain amount more or less of demand for the art so produced; and secondly, and more than all else, it must be true—*i.e.*, the resultant art must be the product of the hand as well as the mind of the executive artist; it must be the work of the artist-workman. C. B. A.

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THE ARCHITECTURAL CONFERENCE.

THE public dinner at the Freemasons' Tavern was a fit termination of the programme of the proceedings of the Conference. It was numerously attended, and the President (Mr. Thomas H. Wyatt) occupied the chair, and was ably supported by Mr. Beresford-Hope, Sir M. D. Wyatt, Professor Kerr, and other speakers, who proposed or responded to the several toasts. Among the guests present were Mr. Henry Shaw, F.S.A., Mr. Gambier Parry, Mr. J. H. Parker, M.A., Mr. F. Ouvry (hon. solicitor to the Institute), Mr. S. W. Kershaw, M.A. (librarian to the Institute), Colonel Seott, R E., M. Arles Dufour, Mr. S. R. Lewin, Mr. E. G. Paley, Mr. Charles Vignoles, Mr. Henry Mathews, and Mr. Brown. This relaxation, if we may so term it, had been well earned by the majority of the party by a visit in the morning to S. Paul's Cathedral, under the guidance of Mr. F. C. Penrose, and by a meeting to discuss matters of construction and science in the afternoon. The progressive use of iron and concrete as building materials, and the methods of testing the strength of these and others —after the papers of Messrs. Aitchison, C. Barry, and Wonnaeott—raised an interesting debate; but the question of the best fire-resisting materials and construction, touched upon in the papers of Mr. C. Fowler and Professor Lewis, apparently elicited the most interest, and the general opinion seemed to be that timber well encased in plaster, or concrete, or brickwork, were the most to be relied upon, and that iron was the least trustworthy.

The labours of the Conference were, however, not concluded on Thursday, a meeting having been arranged for the Friday, to summarise the results of the several previous general and sectional meetings. This was accordingly held at half-past twelve o'clock on that day, after a considerable number of the members and visitors had been conducted over Messrs. Cubitt's works in the Gray's Inn-road.

The PRESIDENT occupied the chair at the final meeting; and, upon his suggestion, after some discussion, it was resolved that the following recommendations should be made to the Royal Institute of Architects, for them to consider before the next meeting of the Conference, which it was thought should be held next year, whether continued annually hereafter or not:—

1. That the remuneration of architects, with all questions arising thereupon, be referred to the Professional Practice Committee of the Institute, and that the names of Mr. Hine, of the Nottingham Architectural Association, and of Mr. T. H. Watson be added to that committee, as also that of Mr. Douglass Mathews as secretary, specially to communicate with the provincial architectural societies.

2. That a Permanent Committee of five architects be appointed by the Institute to watch competitions and act with reference thereto, by putting themselves in communication with all proposers of competitions, and to draw up rules, to be made binding upon competing architects, and that the Presidents of the Architectural Alliance and of the Architectural Association should be among the members of this Committee, and that Mr. R. Phéne Spiers should be requested to act as secretary to this Committee, to communicate with the provincial societies.

3. That a committee be appointed by the Institute to consider the questions relating to surveyors and taking out quantities, with the names of Messrs. Cates and Rickman included in the same, and with power to add a sectional secretary to communicate with provincial societies.

As to other questions that had formed the subject of debates during the Conference, it was thought that, as regards the general conditions of contract, what had been agreed to between the Institute of Architects and the London Builders' Society was so far satisfactory as not to require, at present, any further notice to be taken of it. With regard to architectural education, it was the general opinion that no change of action from that pursued by the Institute was at present necessary, and that it would be well to await the longer working of the systems now in operation, both as regards education and examinations.

Formal votes of thanks were then passed to the Institute of Architects for having summoned the Conference, and to the President for the manner in which he had fulfilled the onerous duties appertaining to the chair, and also a vote of thanks was passed by members of the Institute to the provincial architects who had attended and assisted at the meetings and debates.

The following is a list of the country Fellows and Associates of the Institute and of the visitors which the Conference attracted to London, and we venture to think that it will prove still larger upon the next occasion, as, without question, the general feeling has been that the movement is one of great practical utility and interest. With the experience now gained, the arrangements on a future occasion will doubtless be greatly improved. Perhaps the greatest want felt was that of longer time for the discussions, and to this end we call the attention of the promoters to the fact that this was a want both felt and expressed.

FELLOWS OF INSTITUTE OF BRITISH ARCHITECTS (COUNTRY).

J. R. Botham, Birmingham.	G. G. Hoskins, Darlington.
T. N. Deane, Dublin.	G. Fowler Jones, York.
T. C. Ebdy, Durham.	E. F. Law, Northampton.
W. H. Lynn, Belfast.	E. R. Robson Liverpool.
J. J. McCarthy, Dublin.	Ch. Smith, Reading.
Wm. Peachey, Darlington.	E. Sharpe, Lancaster.
J. P. Pritchett, Darlington.	T. Worthington, Manchester.

ASSOCIATES OF INSTITUTE OF BRITISH ARCHITECTS (COUNTRY).

F. W. Albury, Louth.	C. C. Rolfe, Braintree.
C. O. Blaber, Brighton.	E. C. Scott, Brighton.
T. H. Eagles, Windsor.	F. R. Wilson, Alnwick.

VISITORS.

G. A. Audsley, Liverpool.	T. C. Hine, Nottingham.
E. Boardman, Norwich.	Lewis Hornblower, Liverp'l.
G. A. Barnes, Newbury.	H. Haddon, Great Malvern.
J. Bateman, Birmingham.	G. H. F. Jones, York.
Thos. C. Clarke, Liverpool.	J. H. Owen, Dublin.
John Clarke, Liverpool.	E. G. Paley, Lancaster.
John Clarke, jun., Liverpool.	G. Gard Pye, Colchester.
David Cousin, Edinburgh.	Parke Neville, Dublin.
Geo. Carson, Edinburgh.	R. Thornton Shiells, Edinburgh.
Campbell Douglas, Glasgow.	
C. A. Edward, Dundee.	H. H. Statham, Liverpool.
Jas. Gilbert, Preston.	C. Sherlock, Liverpool.
Wm. H. Hay, Liverpool.	A. Thomson, Glasgow.
James W. Hay, Liverpool.	W. Watkins, Lincoln.

It only remains for us to make a few remarks upon the neither showy nor large collection of working drawings contributed by some architects for exhibition during the Conference in Conduit-street, which yet contained a few drawings of excellence and interest. In the first place, we noted a number of small and delicate sketches for carved Gothic capitals of an early type by Monsieur Viollet le Duc. These are said to be the same which he has given at the works at the Cathedral of S. Denis to be executed. They are admirably though slightly drawn in perspective, and broadly touched with Indian-ink, to express the main shadows and modelling in a masterly manner. Monsieur A. De Baudot contributed some highly interesting details of the construction of the new church erected by him at Rambouillet.

The original drawing on parchment of the design for an unexecuted monument at S. Sebald's Church, Nuremburg, by Vict. Stop—exhibited by Miss Conway—is a remarkably interesting drawing in fine black lines, which, while a geometrical elevation, has some of the subordinate details in partial perspective. The architectural part is clear and decisive, though faint and delicate; but the statues and bas-reliefs are less so. These latter, although bearing the usual characteristics of the Late German Gothic figures, do not look like the work of a sculptor, but merely suggestions for such by an architect. They are not, however, by any means without merit; their designer evidently knew what he wanted, though he lacked the ability to express it. Some of the grotesque animals, the capitals and bosses also, are full of spirit, and yet somewhat rotten in the lines, and not as firmly and vigorously sketched as we might expect. Mr. Wilson's drawing of Alnwiek Castle besieged, from a bird's-eye point of view, which formed one of the diagrams illustrative of his lecture upon the mediæval and ecclesiastical architecture of Northumberland, is clever, though somewhat copied from the military architecture by M. Viollet le Duc; and another, of a Northumbrian gentleman's residence of the period of 1350, is an amusing illustration of one of the simpler peel Castles put to one of its baser but perhaps very ordinary uses, a malefactor being hung from a scaffold on its summit. The decorations of Her Majesty's Theatre, Haymarket, were exhibited by Messrs. Lee, Sons, and Pain, together with plans, sections, and details of the structure itself. A number of plans of mansions were exhibited by Professor Kerr, who also exhibited details of that of Bearwood. Mr. W. White sent the drawings and photographs of a large master's house at Eton. S. Stephen's Church, South Kensington (proposed tower and spire), was sent by E. C. Robins, who also exhibited drawings of the proposed Denmark Theatre and Winter Garden in Leieester-square, and an iron railway-bridge at Leeds. Mr. C. Barry sent plans, elevations, and details of Dulwieh College and Burlington House, Mr. Belcher those of the Mansion-house buildings in course of erection, Mr. Joseph Clarke some very careful drawings for restoration of village churches in Kent, with timber spires, bell framing, &

Mr. Schmidt exhibited his proposed building for the accommodation of the various learned societies, and Mr. I'Anson the working drawings of the British and Foreign Bible Society's house, Mr. Douglass Mathews those of new warehouses in Dowgate-hill and College-street, and Mr. Tarver of the rectory recently built at Broadstairs. Mr. Edwin Nash sent the contract working drawings of the South Metropolitan Schools, Mr. Rolfe those of schools at Newbury, Berks, Mr. Worthington the working drawings of the Manchester Police-courts, with those of a mansion at Didsbury, Mr. Bassett Keeling those of S. Augustine's Church at Highbury New Park, and Mr. Edward Power those of S. Philip's Church, Heigham, Norwich.

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LABOURERS' COTTAGES IN SCOTLAND.[*]

AMONG the printed questions circulated by the Assistant Commissioners in Agriculture was this:—"By the Act 27 and 28 Vic., cap. 114, July, 1864, the Enclosure Commissioners are authorised to advance public money for the improvement of land, including by section 9 the erection of labourers' cottages, and the improvement of, and addition to, labourers' cottages. Have you any remarks to make upon this Act in regard to any additional facilities, or any reduction of cost that might cause greater progress to be made in stpplying the want of good cottages?" This question was replied to by several hundreds of competent and experienced witnesses, and a digest of their evidence we propose to lay before our readers. The cottage accommodation is unquestionably deficient—in the size and quality of the building to a certain extent, but in quantity to a far greater degree. The obstacles which exist to provide or retard improvement in this respect are twofold — namely, the poverty of the landlord and the awkward operation and limited powers of the Enclosure Act referred to, together with the want of practical tact and common sense in the Commissioners themselves. A minor difficulty lies in the attachment of the peasantry to their own rude habitations and primitive modes of life.

The first point to be noted is this: The testimony is generally decisive and unanimous that, as a rule, the agricultural labourer cannot afford to pay more than £3 or £4 rent for his cottage, and there is a strong desire both among the landowners and farmers to have more cottages, and of better quality. But the interest charged by the Enclosure Commissioners is too high, and the time for repayment (twenty-five years) is too short. Under the present system it does not pay to build cottages, and until it is altered no improvement need be expected. The secretary of the Highland Society, Mr. Menzies, says:—"If money could be obtained at something less than 5 per cent., to be repaid in forty years, our proprietors and tenants would very likely arrange to take advantage of it, and our 'black' houses would soon disappear." To build a cottage according to the ideas of the Commissioners costs at least £200; the rent charge on that sum amounts to £13 10s. per annum. If the labourer can pay of this £3 10s., the landlord would be out of pocket £10 per annum for twenty-five years on every cottage he built. A rich landlord who can afford to build them according to his own ideas of his people's requirements is in a better position, therefore, than a poor one who, if he desires to improve his cottage accommodation, is driven to borrow from the Commissioners. The Duke of Richmond, for example, is building in Aberdeenshire three pairs of cottages annually, at a cost of £200 per pair, the rent being £5 each, while the cheapest yet built under the sanction of the Commissioners cost £120 each (p. 104). The rent is not named, but would be, if it included the rent charge, at least £8. The system, therefore, is clearly so inappropriate to the circumstances as to be inoperative and useless. "It is extremely desirable that the duration of rent charges on loans under the Enclosure Commissioners should be extended," says one proprietor; "in fact, imperative, if advantage is to be taken of such means for cottage building." That those landowners who are possessed of sufficiently large private means can build suitable cottages at a remunerative cost is quite certain. Mr. Waldegrave, of Strathoor, had built cottages having a "but and ben" (*i.e.* a kitchen and sleeping-room), with a "lean-to" behind and porch in front, a garden, and a pigstye. The kitchen floor is of quarls, the other room is boarded, and divided as usual by box beds. These cottages are much liked by the occupants; they cost £90 each. Lord Home has built cottages of stone and slate, costing also £90. The kitchen has one bed in it, the parlour two, with fireplace; there are also a press and pantry.

Mr. Hope-Johnstone's plan seems an excellent one. A building lease is granted for nineteen years at a rent of £1 per annum and £5 10s. for a pendicle, *i.e.* bit of ground of two acres and a half. The tenant examined built his house with kitchen, two bedrooms, a loft, piggery, and byre, or cow-house. He laid out as his share his own labour and £50 in cash, and considers it money well spent. But then it is to be observed, he adds, "I make no doubt of remaining tenant at a low rent after the lease has run out. What can a man do better with his money than lay it out, as I have done, in making for himself a comfortable home which he is sure of not being turned out of while he lives?" Other tenants of Mr. Johnstone's gave similar evidence, but had laid out even less money, and were paying a rather lower rent. One had laid out £40, and paid 5s. per annum; he expected to continue in it after the lease had expired at £2. Of course, such leases are only granted to persons of respectable and orderly character; and it is gratifying to observe the mutual confidence which appears to subsist between the landlords and their tenants. Little comment is required to show that the system is one of the very best that could be devised.

The cheapest cottages built are some constructed on a very simple but convenient plan by Captain Campell, of Ardpatrick. There are kitchen, sitting-room, scullery, or pantry, and a ladder leads up from the pantry into a dark store-room under the roof. The windows are large, and open like sash windows; but, as any one will guess who has had experience with this class of people, are kept close shut even in warm weather. They cost only £60 each, including labour; but it is to be noted that they are thatched with bracken, or heather, which, it is stated, lasts very well for half-a-dozen years, the cost being almost nominal, whereas a roofing of slate would be £20. A very rough kind of cottage has been built in Jura with two rooms, thatched, and lined with rough wood, for £40. The landlord in this case finds material and wright-work; the tenant finds labour and pays no rent for three years. The lowest kind of all mentioned are in the island of Tyree; they are constructed and inhabited by pauper squatters. They are one-roomed, and composed of double stone walls with sand between and a roof of turf or thatch. No rent is required of these people, as it is well known that they have no money to pay it with.

This sketch will show that better cottage accommodation is greatly wanted, and the report abounds with evidence that the people themselves desire to have it, and that the proprietors are most anxious to build, but the difficulties with the Commissioners are insuperable. "The expense of obtaining those loans is far too great," says one witness; "this, as well as the strictness with which the Commissioners adhere to their rules for the construction of cottages, I know keeps back many landowners from taking advantage of such loans." "The high rate of interest charged in the form of a rent charge of money borrowed for cottage building under sanction of the Commissioners, compared with the rent which a labourer can pay, makes the Act referred to useless," says another. In the loans for drainage the Act works much better. Outlay of this description repays the proprietor more quickly and certainly, and there are not two opinions about the advantage of a thorough good deep drainage. To introduce a short measure conferring powers on the Commissioners to reduce the rate of interest to 4 per cent., and extend the period of repayment to forty years instead of twenty-five for cottage building, would be easy enough for the Government to do; but among their many ambitious projects is is useless to hope for anything so commonplace, practical, and useful as this would be. Even then another difficulty would remain, unless common sense could be driven into the heads of the Commissioners by Act of Parliament. These gentlemen are doctrinaires. They have their own preconceived ideas of the style in which a peasant ought to live, and their opinions and those of the labourers concerned are on this point diametrically opposed.

The agricultural labourer in Scotland, and especially in the Highlands, cannot afford to pay a high rent; having only furniture for two rooms, he does not use a third if he has one. The climate is cold, and they are too poor to have more than one fire. The Commissioners may, to begin with, put the beds where they like, but in the end they are sure to be collected in the kitchen in view of the peat embers. The bare condition of the third room qualifies it for the abode of the poultry or pig, or it is made into a store place for turf, coal, &c., as the case may be. But the Commissioners insist on having at least three bed-rooms or bed-closets, even if the kitchen is made very small therby; they like vestibules, and object to one room leading into another. Here is a case in illustration:—

> What was considered by the proprietor's agent and architect a very good plan for cottages of a superior construction was forwarded to the Commissioners for approval. It was at once returned, as provision had not been made for the required number of rooms. There were two bedrooms intended, I think, besides the sitting-room. The Commissioners' regulations were duly attended to. Fresh plans were drawn out with the required number of rooms, and again forwarded to London. A second time were they rejected, and this time on the score of "a very objectionable arrangement," viz.: that in consequence of having to provide for the additional bedroom without having had our ground space extended, we had availed ourselves of every possible inch of ground at our disposal, and had no room left for a separate passage to one of the smaller apartments, which consequently opened directly out of the larger. "No bedroom," the Commissioners declared, "should be a passage to another bedroom." It was only after much correspondence—in the course of which their own local inspector informed them that the large bedroom was intended to be occupied by the heads of the family, and the small one off it by the younger children, who will thus be within hearing of their parents in sickness or distress; and that "this is thought a great convenience in such a family, where no servant will be kept"—that the rejected plans were finally accepted.

Again, it is stated that cottages such as the Commissioners require, with at least three bedrooms and a sitting-room, are not so much wanted as smaller ones. "What are a newly-married couple without incumbrance to do with such a castle? They simply fill up the spare rooms with all kinds of lumber, vegetables, &c., or take lodgers, both of which are objectionable." "Every landowner who conversed with me on the subject," says another witness, "complained very much of the number of rooms required by the Enclosure Commissioners." "There is no greater mistake than that of building too-expensive cottages for farm labourers," is the testimony of a large occupier. "Under the Commissioners the cottages are altogether got up too expensively," adds another.

We cannot doubt the reasonableness of these objections. Here we have a knot of gentlemen obviously ignorant of the habits and requirements of peasant and agricultural life, and apparently either unable or unwilling to learn them. A small army of inspectors are sent to all parts of the United Kingdom, at a great additional cost, to superintend such works as are done under the Act referred to, but which persons on the spot are much better able to superintend. These gentlemen sit in London, and to them all the plans and correspondence must be submitted; but they have preconceived notions on every point, from drainage upwards. They have a theory even on the number and size of the bed closets in a cottage in a remote part of the Highlands of Scotland, and it causes them grave uneasiness; in fact, they regard it as "a very objectionable arrangement" that one bedroom should open into another, even though little children should occupy it. When pedantic notions of this kind are suffered to interfere with the progress of a work of unquestionable utility and necessity, routine and centralisation have reached a point where they are not only ridiculous but injurious.

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Amalgamated Society of Carpenters and Joiners.—A movement is in progress in Birmingham, Bradford, Manchester, and other large towns in the provinces, for the removal of the management and seat of the executive of the above society from London. This step, according to a Birmingham paper, has been taken principally in consequence of the short-sighted policy pursued by the London executive in attempting to prohibit the general secretary (Mr. R. Applegarth) from sitting as a member of the Royal Commission on the operation of the Contagious Diseases Acts. This prohibition, together with the harsh personal treatment he has for some time been subjected to at their hands, has caused Mr. Applegarth to resign his office as general secretary. So indignant are the members at the personal animus shown by some of the members of the executive towards Mr. Applegarth, that numerous resolutions have been forwarded by various branches to the general offices in London, calling upon Mr. Applegarth to withdraw his resignation; and a meeting of the Provincial General Council has just been held in London, and they have unanimously condemned the decision of the Executive Council, by which it was attempted to prevent the general secretary sitting on the Royal Commission. We regret to hear that the determination of Mr. Applegarth to resign his office is unalterable; but hope that the freedom from the restraints of the office he is vacating will enable him to be still more useful to a cause which is the cause of labour—a principle which carries with it the welfare of every class and interest. Mr. Fred. Booker, of Manchester, is a candidate for the vacancy, and is well recommended by officers and members of similar societies; and, judging from his well-known qualifications, he will no doubt gain the appointment. Birmingham, as a midland town, will no doubt be the future seat of the executive.

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[*] From the *Pall Mall Gazette.*

"THE APOCALYPSE," BY ALBERT DURER.

We give this week a photo-lithograph of one of Albert Dürer's finest engravings, "The Apocalypse."

> "And I turned to see the voice that spake with me. And being turned, I saw seven golden candlesticks;
>
> "And in the midst of the seven candlesticks one like unto the Son of Man, clothed with a garment down to the foot, and girt about the paps with a golden girdle.
>
> "His head and his hairs were white like wool, as white as snow; and his eyes were as a flame of fire;
>
> "And his feet like unto fine brass, as if they burned in a furnace; and his voice as the sound of many waters.
>
> "And he had in his right hand seven stars: and out of his mouth went a sharp two-edged sword: and his countenance was as the sun shineth in his strength."
>
> Revelations, chap. i., verses 12, 13, 14, 15, & 16.

As "C. B. A." has offered some observations on Albert Dürer in general, and this engraving in particular, in another column, there is no necessity for us to enlarge upon it here. Our engraving is an exact reproduction of Dürer's work.

We are indebted for the loan of the original engraving to Mr. Burges, who thinks it is one of the best works of the great German master. Mr. Burges said, when he lent it to us for reproduction. that after we had published it, it ought to be mounted and hung up in every architect's office in England. But why should it be confined to architects' offices ?

We cannot conclude this notice without mentioning an incident of travel related by Mr. Burges, though he may blame us for publishing it. When Mr. Burges visited Nuremburg, where Dürer was born and buried, one of the first things he did was to buy one of the freshest bunches of flowers he could get, and go and place it with reverent hands on Dürer's tomb. Some may think such an act somewhat sentimental; we, however, are sufficiently emotional to consider it appropriate and becoming. It is now exactly four centuries since Dürer was born, and it says much for the man, and his place in the art-history of the world, to see an eminent English architect, after so many ages, making something like a pilgrimage to his birthplace, and placing a memorial of fragrant flowers on his grave.

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WEST OF ENGLAND SANATORIUM, WESTON-SUPER-MARE.

One of our photo-lithographs this week represents the new building of this Institution as intended to be completed. The foundation-stone of the first portion was laid on Tuesday last, the 30th May, with Masonic honours, by the Right Hon. the Earl of Carnarvon, D.G.M., and Provincial Grand Master of Somersetshire, and in the presence of a numerous body of Freemasons of Somersetshire, Bristol, and other provinces. The Institution was started about three years ago, a house on the present site being purchased and adapted for the purpose. Since that time it has rapidly increased, and more accommodation being required, additional land adjoining has been purchased, and the new building commenced. The children's and women's wings and the dining-hall are to be first erected, the old premises being connected with the new and used for the present for the men's department. The grounds extend from the high-road to the sea-beach, provision being made for bathing on the sands.

The buildings have been arranged in accordance with the requirements of the medical staff, after a careful study of the arrangements of other kindred institutions. The dormitories provide a minimum of 850 cubic feet for each inmate, and for adults and the elder children curtained tents are arranged between the beds for the sake of privacy, and there are a certain number of small rooms as private bedrooms for the use of those who pay an extra sum for the accommodation, but the whole of the inmates take their meals together in the central hall. Particular attention has been given to the subject of day-rooms, ample space being provided in them for the whole of the inmates, the dormitories being used only for sleeping purposes. The whole of the building will be heated by hot-water pipes, and the day-rooms will have also open fireplaces; each dormitory is fitted up with a range of lavatory basins, with hot and cold water laid on; every provision is made for proper ventilation. There are no water-closets on the premises, "the earth system" being adopted throughout (it having been in use in the present building from the first, with the best results). The buildings are of native limestone, with hollow brick linings to the external walls, and dressings of Bath stone. The roofs are covered with tiles. The whole of the woodwork internally will be of red deal and pitch pine, varnished, and the walls throughout finished in distemper.

The architect is Mr. Hans Fowler Price, of Weston-Super-Mare, and the contractors for the first three sections Messrs. John Harvey and Son, of Torquay.

References to Ground Plan.

A	Hall.	W	Silent Women.
B	Lobby.	X	Lady Superintendent.
C	Visitors.	Y	Chaplain.
D	Porter.	Z	Chapel.
E	Dispensary.	*a*	Women's Day Room.
F	Medical Officer.	*b*	Children's Day Room.
G	Silent Men.	*c*	Pantry.
H	Cloak Room.	*d*	Lavatory.
I I	Stores.	*e*	Cooking Apparatus.
K	Men's Day and Smoking Room.	*f*	Kitchen.
L L L	Earth Closets.	*g*	Scullery.
M M M	Earth Houses.	*h*	Serving Space.
N	Men's Day Room.	*i*	Servants' Hall.
O O O	Staircases.	*k*	Pantry.
P	Corridor.	*l*	Knife.
Q Q	Out.	*m*	Coals.
R	Men's Private.	*n*	Heating Chamber.
S	Two Men.	*o*	Wood.
T	Five Men.	*p*	Yard.
U U	Conservatory.	*q*	Stables.
V V V	Five Women.	*r*	Carriage Shed.
		s	Cesspool.

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ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

The thirty-second of this course of lectures was delivered on Tuesday afternoon last by Dr. G. G. Zerffi, at the South Kensington Museum. After some introductory observations, the lecturer remarked that Christianity was firmly established by Constantine. He made it a state religion, and from that moment it became totally different. Constantine further removed the seat of the old Roman empire to Byzantium, afterwards Constantinople (or Constantine's town). This new imperial abode was to be given to the new faith, and Rome was to be eclipsed in grandeur. The most splendid edifices and the most beautiful art were to abound in the Byzantine capital. Under these circumstances, the old Roman patricians left Rome altogether to settle down at the seat of a powerful emperor and a new religion. Just as in politics it was possible, by means of mere theories to create the semblance of freedom, so, in an artificial way, could art be created and promoted. Byzantine art took its root in the West in Greek and Roman elements. Here Asiatic forms came into contact with modified Roman forms, for the Byzantine art of the period (Asiatic in its character and treatment) was seen side by side with ancient Greek art, the motives of which were in several cases taken from the Asiatics, being purified and simplified even to severity; and in the time of Constantine this already degenerated severity comes into contact with Asiatic art as it then existed. Constantine exercised his utmost influence to promote Christianity, and opened no less than 430 churches in Constantinople alone. But, on the other hand, he tolerated the re-introduction of heathen festivities and customs. He destroyed altogether the simplicity of the organisation of the primitive church, and established a powerful hierarchy, depriving its servants of all humility and self-abnegation, and allowing the prelates to indulge their animosities against each other. The spirit of dissension thus engendered gradually leavened the mass of the people, to the detriment of art, for, when people's minds are wholly occupied with metaphysical and theological discussions, the development of art is impossible. In such times, the most insignificant symbols were sufficient to excite a degree of animosity such as is sometimes witnessed even in modern times among uneducated political communities—uneducated, that is, in that they do not possess the spirit of tolerance. Notwithstanding that Constantine introduced the Christian faith, and used all his power to promote its extension, he went the wrong way to work, and, instead of spreading love and kindness, the seeds of animosity and hatred were sown and brought forth fruit of their kind, so that when Julian ascended the throne soon after Constantine's death, he felt keenly the sad state of things existing in his dominions. A reaction set in, and he turned back to the old Pagan faith, which had existed so long with comparatively no dissension. The reaction developed itself strongly under Julian, who, as a great philosopher, taught his people tolerance. The next Emperor of note was Theodosius (388-391, A. D.), who was the first ruler who, as a born Christian (and a good Christian, too), upheld the Christian faith; but even the stricter-observed religion did not eradicate the spirit of sophistry, scepticism, licentiousness, and luxury which rendered the whole Roman Empire an easily-excitable, scarcely coherent whole. After Theodosius (in 395, A. D.), the East and the West separate; Honorius takes the West, Arkadius keeping the East. From that time Byzantium became more and more Asiatic, Rome becoming more markedly Aryan (or Teuton). Justinian was the next sovereign of note; his power is felt to this day in Europe, and even in our own country, in the existence of some almost obsolete but highly penal laws. His laws were, on the whole, in a high degree admirable. His wife, Theodora, after leading a somewhat questionable life, suddenly became a pious enthusiast, and founded nunneries and hospitals. On the other hand, she excited Justinian to the very greatest pride, and tried to make the faith to which she belonged the faith of pomp and splendour. In this she succeeded in the highest degree. Under Justinian was constructed that curiosity of the world, the Church of Sta. Sophia, at Constantinople, the central dome of which is 115ft. in diameter. Similar in form to Sta. Sophia, but seven centuries later in date, is S. Mark's, at Venice. The whole planning of Sta. Sophia's is characteristic of Byzantine art, with its round and square compartments and divisions. Partaking also of some characteristics of Sta. Sophia's is the Church of S. Vitale, at Ravenna, the Church of S. Apollinarus in Classe, at Ravenna, the tomb of Theodoric, and the round church at Aix-la-Chapelle. In all these buildings, as at Sta. Sophia, there were, up to the time of their erection, no divisions or exclusive boundaries marking the limits of the different classes of the populace. The first ground plan of a church in which these divisions were met with was the old S. Peter's, at Rome, which had double aisles on each side of the nave, and was, in addition, divided into narthex, naos, pronaos, and apsis. Closely following S. Peter's in this respect are the Church at Monreale, the Cathedral of S. Godehard, at Hildesheim, and a church at Gurk. In Sta. Stophia the simplicity of plan of the basilicæ is totally disregarded. The forms, both constructive and decorative, are rich and varied. In consequence of the sub-division of plan, it was not possible to get a general impression of the whole interior of the building in any one part, and this was of course a very great mistake in a monumental building. Sta. Sophia was finished in a very short time, viz., five years, eleven months, and ten days. The architects were Antimeus and Isidorus. The dome rises 180ft. from the pavement, and is illumined at its base by 24 windows, which extend side by side for the whole circumference, there being only a shaft or pillar between each window. These shafts are scarcely perceptible in the bright corona-like blaze of light, and thus the dome has very much the appearance of being suspended over the building in mid-air. The church is nearly square on plan, and measures 243ft. square each way, exclusive of the apsis and narthex; including these, however, the length is 269ft., (some say 270ft.) The whole of the building is of bricks, over-laid with marble. The capitals in Sta. Sophia are cushion shaped, sometimes combined at the base with acanthus leaves, or Ionic volutes. These capitals, the lecturer said, were put in as a kind of compromise between the columns (which were too slender, apparently, to support the superstructure) and the superstructure (too heavy in appearance for the comparatively slender columns below to support it), and were thus an after-thought, or rather a deviation from the original design; they, though unwieldy taken by themselves, being so formed as to neutralise the incongruity of columns and superstructure. After briefly referring to the tomb of Theodoric, at Ravenna, the lecturer concluded by describing one by one the various vestments worn by the hierarchy of the Latin and Greek churches, and by pointing to the symbolism expressed in each garment, and its mode of being worn.

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Medal in Commemoration of the Opening of Blackfriars Bridge and the Holborn Viaduct.—A medal has been struck, by order of the Lord Mayor and Common Council of London, to commemorate the opening of new Blackfriars Bridge and the Holborn Viaduct, on November 6, 1869, by the Queen. The sculptor employed on the design was Mr. G. G. Adams. On the obverse side of the medal is a portrait of her Majesty in bold relief. On the reverse side are representations of the viaduct and bridge, encircled by branches of laurel and oak leaves alternately, these branches springing from behind the City shield, which occupies the centre foreground. On the left side is an allegorical figure of the City of London, who, having recorded on her scroll the day of opening, looks towards a figure of Britannia, on the opposite side, who is represented as proclaiming the works opened. The accessories are S. Paul's Cathedral and the buildings in the distance, with the river Thames.

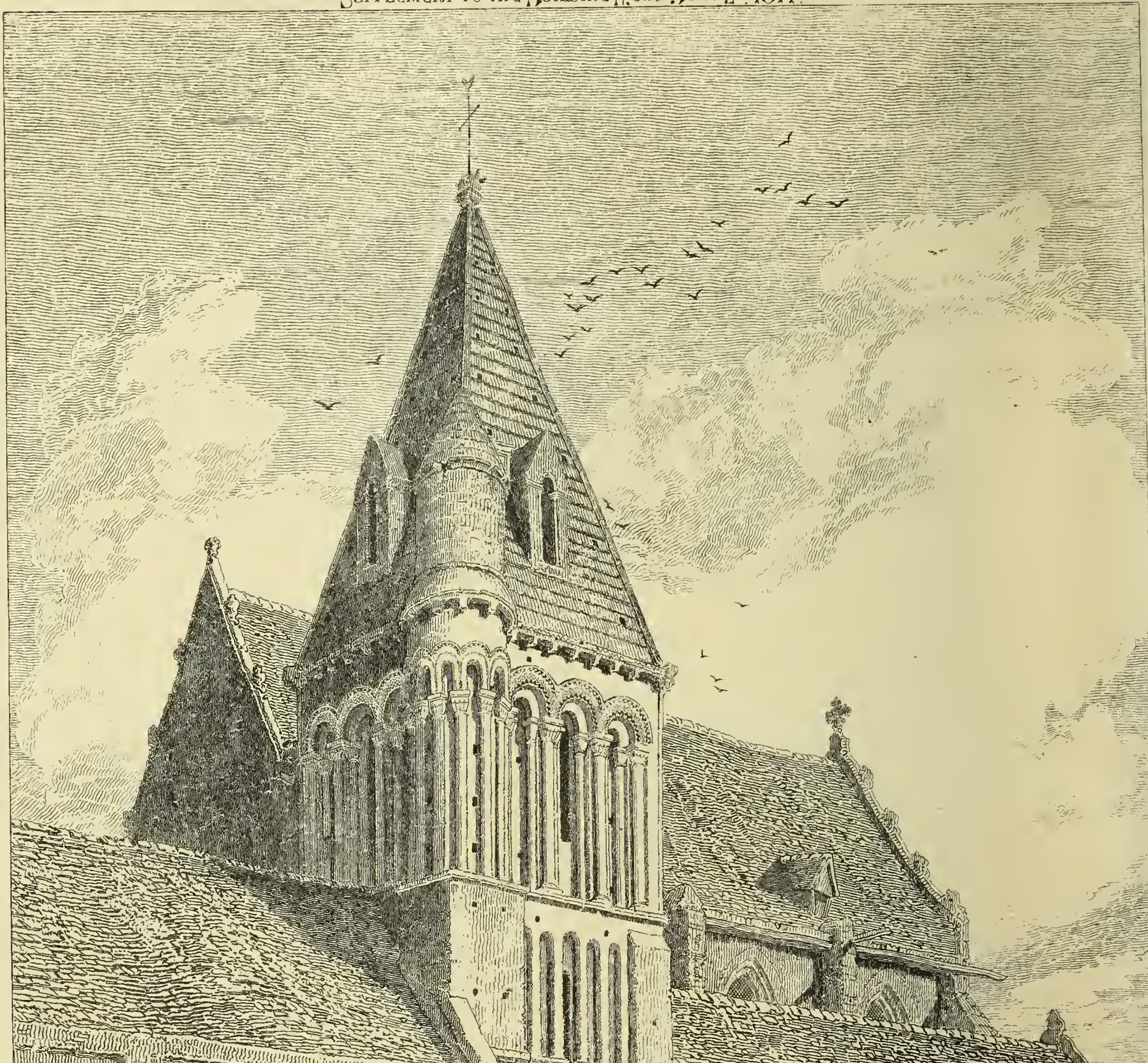
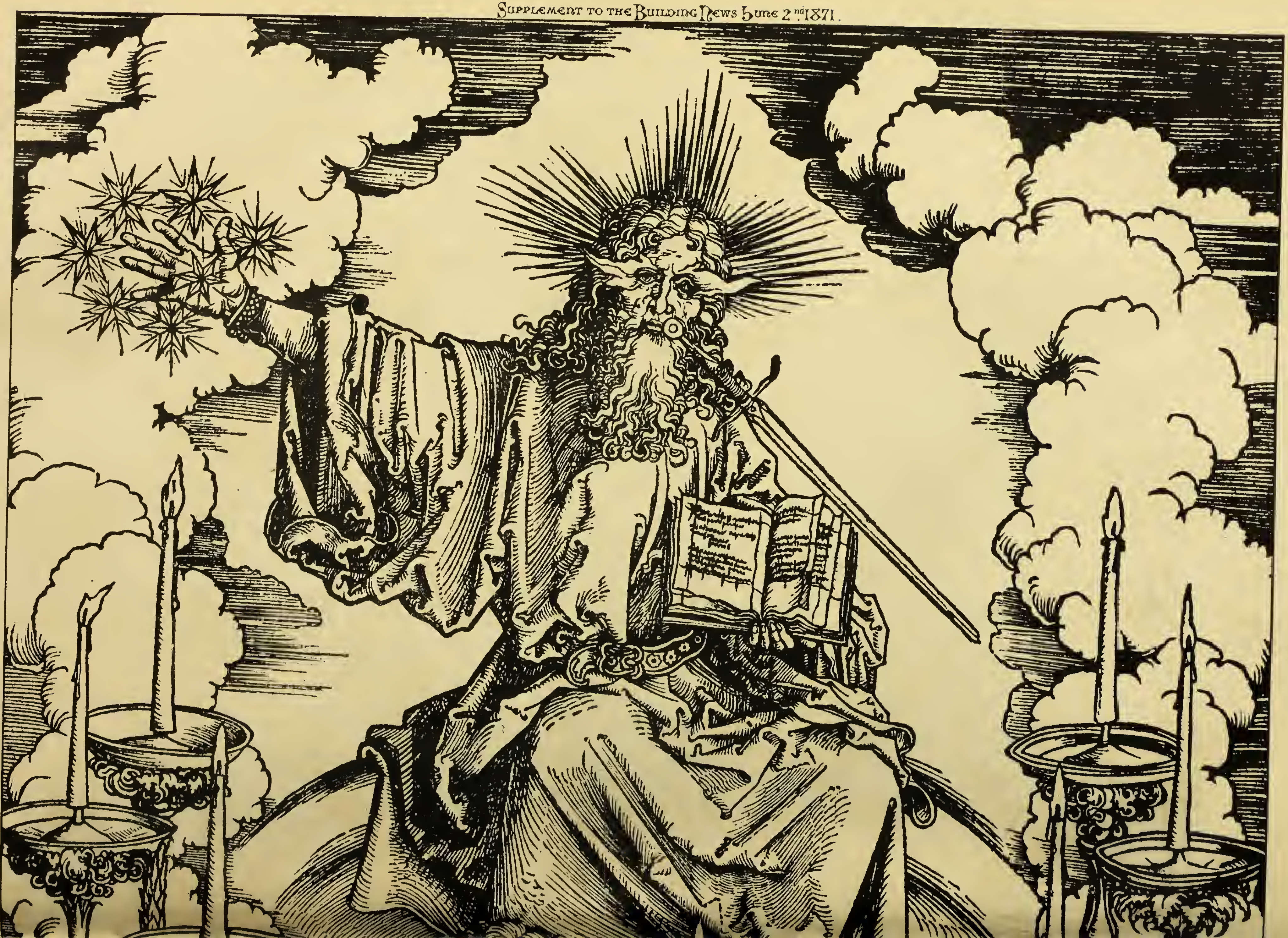


Photo-Lithographed by Whiteman & Bass

TOWER OF THE CHURCH OF S. MICHEL DE VAUCELLES,_CAEN.

Supplement to the Building News June 2nd 1871.



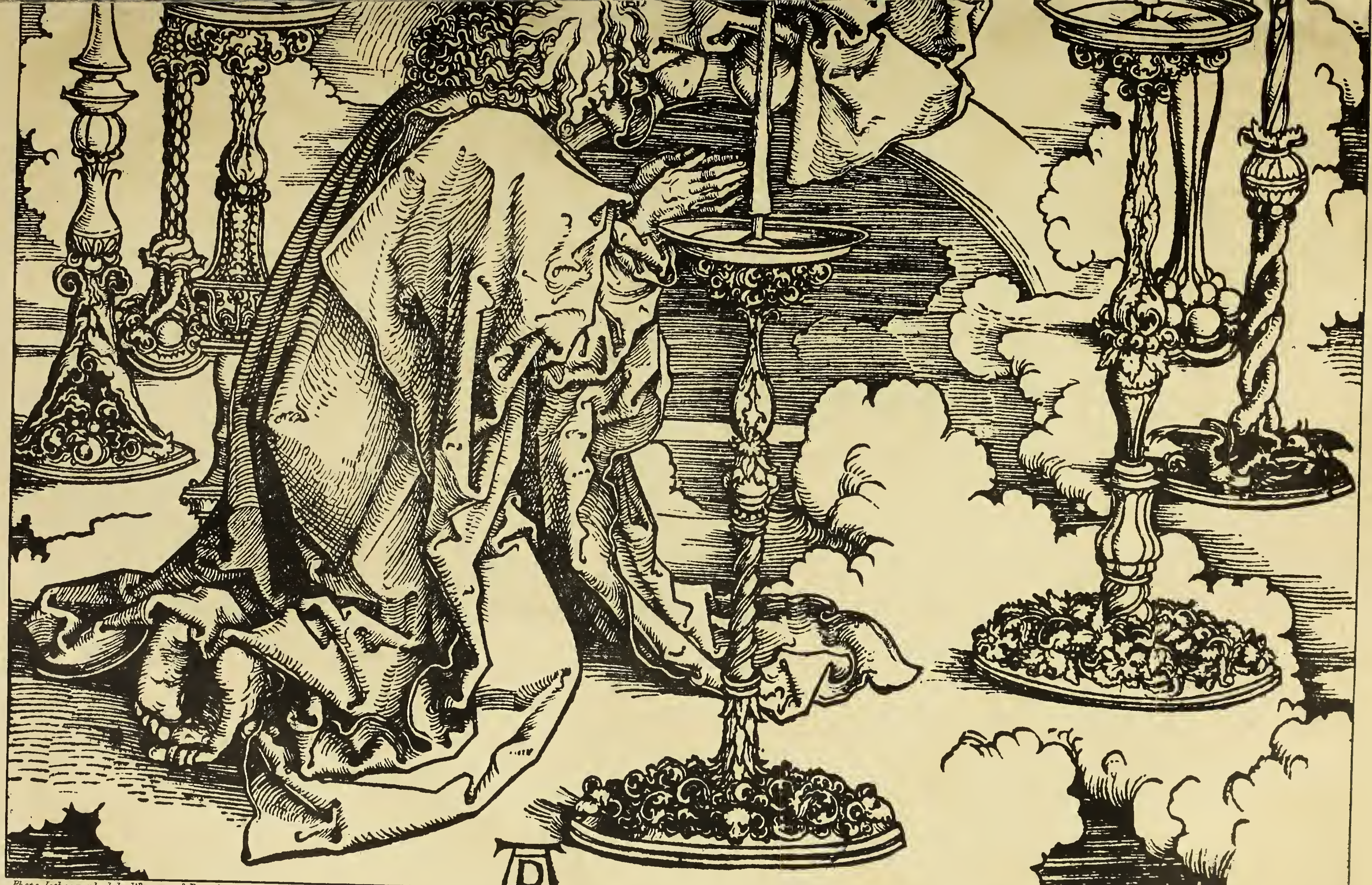


Photo-Lithographed by Whiteman & Bass London

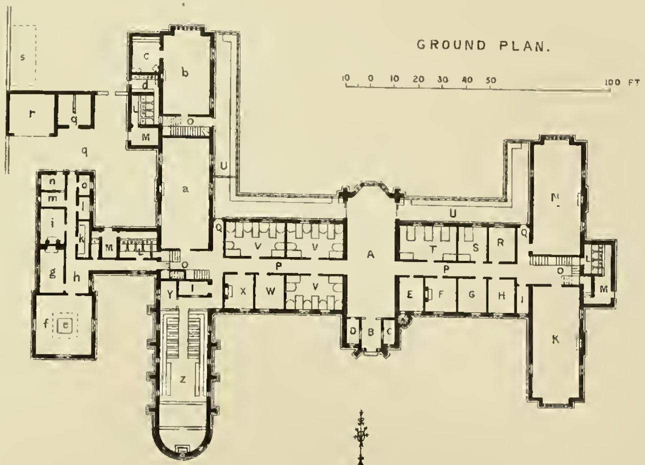
THE APOCALYPSE – BY ALBERT DÜRER.

SUPPLEMENT TO THE BUILDING NEWS JUNE 2nd 1871.

WEST OF ENGLAND SANATORIUM, WESTON-SUPER-MARE, SOMERSET.

HANS F. PRICE, ARCHT

GROUND PLAN.



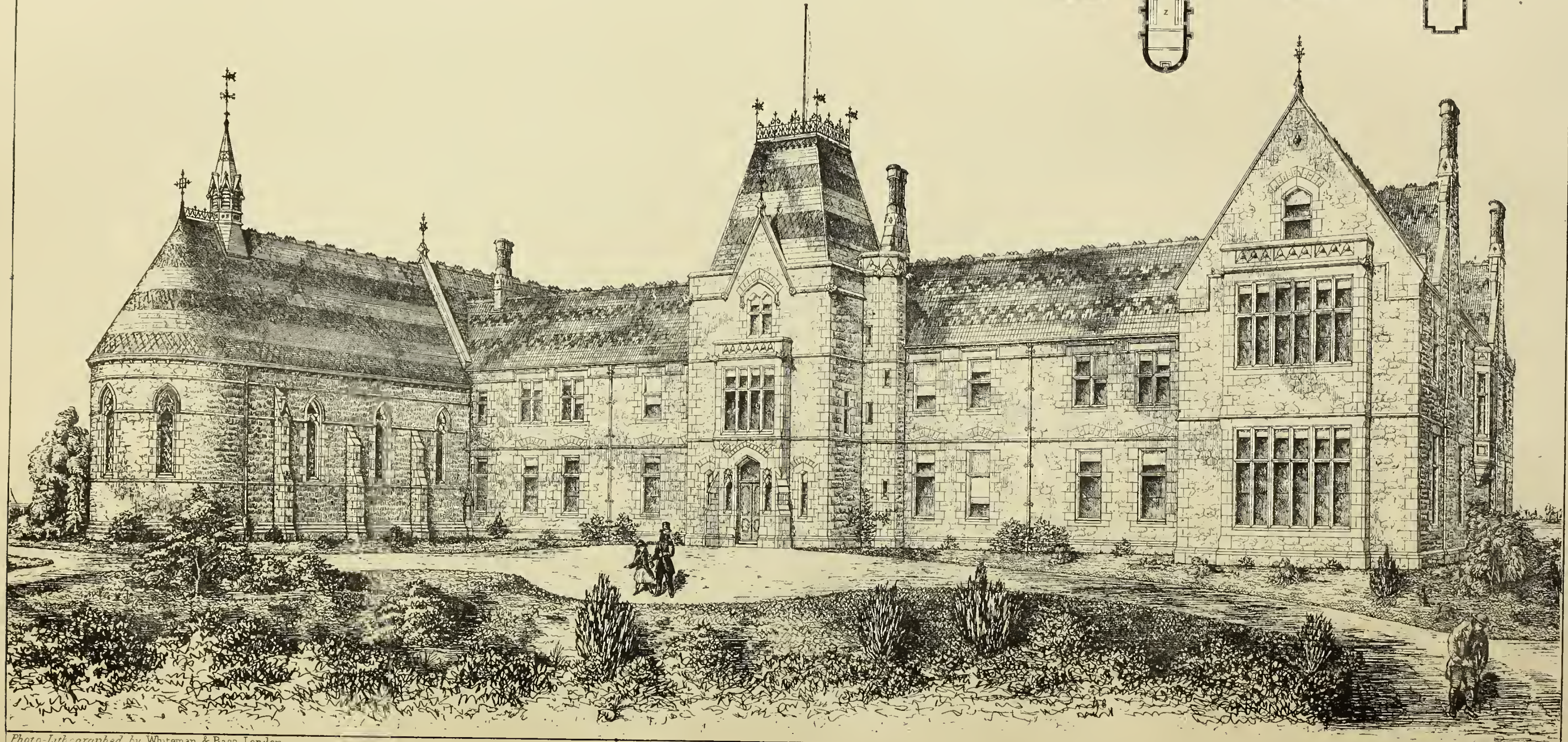


Photo-Lithographed by Whiteman & Bass London

DILAPIDATED HOUSES.

THE forlorn and dilapidated and long-tenantless houses in Stamford-street and the Blackfriars-road have formed for many years a standing disgrace to the metropolis. That with the present value of land in London, and with the rateable value of the property if occupied, such houses are allowed to remain worse than unproductive, is a great scandal, in face of our excessive pauperism, and it is to be hoped that in the proposed Metropolis Buildings Bill some clauses will be inserted giving the local authorities power to deal with such eyesores. We quote the following remarks on the subject from the *City Press*; it will be seen that our contemporary alludes to the Court of Chancery in connection with remedial measures, but, by all accounts, it is owing to their owners having become involved in some Chancery suit equal in havoc and ruin to the *cause célèbre* of "Jarndyce and Jarndyce," that these houses are in their present condition. Our contemporary says: "Dilapidated houses might be summarily dealt with, as we deal with men who are drunk and incapable. The Court of Chancery might serve for the active agent, were it not the slowest and costliest luxury of an age that is lavish in its patronage of lawyers. To become dilapidated should be an act of forfeiture on the part of any house, but we need not be so hard on the few that grin and goggle on the wayfarer in London. The Metropolitan Board could take charge of them, repair them, let them, and appropriate for the advantage of the ratepayers in general the resultant rental. Of course very soon after the Board took forcible possession of one of these ghastly properties, a claimant would turn up, and then would begin a terrific litigation. If the Board proceeded under a well-drawn Act, it might be protected against loss by litigation by compelling the complainant to pay the costs of the suit in any case, and to lodge a considerable sum of money in court in the first instance, in attestation of his confidence in his cause. By this means a claimant would be sure of punishment for having disgraced the town, but there would be no act of confiscation, because he might still obtain his property on establishing his claim, and losing by the process the costs on both sides."

LITHO-FRACTEUR.

LITHO-FRACTEUR, as its name implies, is an explosive material for breaking up stones or rocks in the processes of mining and quarrying. It is a patented composition invented by Professor Engels of Cologne, and was first brought into general notice in consequence of its employment by the Prussians in destroying some of the large guns taken in the Paris forts, although it has been in use to some extent in Germany and Austria for the last eighteen months. Its principal constituents are nitro-glycerine, gun-cotton, infusorial earth, and a few other substances known only to the manufacturers and the inventor. While possessing the power of nitro-glycerine, however, the dangerous nature of that terrible explosive is completely removed, and, as has been proved by recent experiments, the new composition is perfectly harmless until placed in a suitable position and deliberately fired. It is a stiffish light-coloured paste, which burns to a white ash, and is made up into cartridges by wrapping it in thin paper, the size being $4\frac{1}{2}$in. long by $\frac{7}{8}$in. diameter, each cartridge containing $1\frac{3}{4}$oz. of the material. It can only be exploded by a percussion cap, in the same way that M. Nobel explodes dynamite and Professor Abel gun-cotton. The experiments to test its qualities, which took place at the Naut Mawr quarries, about twenty miles from Shrewsbury, were commenced by throwing a box containing 5lb. of the composition from the top of the quarries to the bottom of the excavation, a height of 150ft., and although the box was broken, and the cartridges scattered about, no explosion took place. A similar result followed when a cartridge was ignited, the composition burning slowly and steadily away. The method of charging the cartridges with the exploding cap is as follows:—The end of a piece of Bickford's fuse is inserted in a percussion cap, about a quarter of an inch in diameter, and an inch long. The cap is inserted in the end of the cartridge, being bedded in the litho-fracteur; the paper is tied round the fuse, and the charge is ready for firing. The outer end of the fuse being lit, it burns down to the cartridge at the rate of one foot in forty seconds, and when the fire reaches the cap it explodes it, and the charge is fired. Under certain circumstances the charges are exploded by electricity, but for mining purposes the safety fuse is generally used.

A series of "shots" were tried at different levels on the face of the quarry, with holes bored in the ordinary manner as for gunpowder, with this exception, that the vertical blast holes were placed much further from the face of the quarry wall than would have been practicable with powder. The first blast was with a nearly horizontal hole 3ft. 4in. deep and $1\frac{1}{2}$in. diameter, charged with ten cartridges, and tamped in the usual way with water. Large masses of stone were detached and thrown forwards, and the face of the rock was scaled and cracked over an area of 19ft. by 12ft. The real value of this result will be seen when we state that in the case of these horizontal bore-holes gunpowder would have made no impression at all. Two more of these holes, each 3ft deep, and charged, the one with seven and a half and the other with ten cartridges, were now fired simultaneously, each shot producing excellent results. The grandest results, however, at this stage were undoubtedly obtained with ten cartridges in a hole 4ft. 6in. deep, bored vertically into the stone on one of the ledges formed in the course of working, and at a height of about 20ft. up the face of the quarry. Here about twenty tons of stone were detached from the face of the rock and thrown down, and a large portion of the surrounding rock loosened.

Some experiments on rails were also made to show its tremendous power, in one of which two rails (75lb. to the yard) were broken in halves, and thrown some distance apart by 1lb. 5oz. of litho-fracteur made into a cake and placed in the channel of the uppermost rail.

To convince railway companies and those present of the safety with which the new compound may be handled and carried, cartridges were secured to the wooden buffers of a railway waggon in such a manner that they would receive the full force of a collision; the waggon was then allowed to run down an incline of one in eight for a distance of 500 yards where another similar waggon was stationed. Both waggons were of course demolished, but no explosion occurred, the composition being found smeared on the fragments of the waggons. A similar result was obtained by plating the buffers of the running waggon with iron, but semi-explosion took place in two cartridges secured to the rails in the middle of the incline. An examination showed that this was doubtless occasioned by the intense heat at the exact point of impact, the great bulk of the cartridge remaining unignited, and spread over the surface of the rail. The concluding experiment of the series illustrates the action of the litho-fracteur n operations under water, and was in part designed to meet the views of Commander Harvey, R.N. A raft was made of four 2in. planks, braced together by three other planks. A charge of 3lb. of litho-fracteur was secured under the centre of the raft, which was floated in the middle of the river Severn; it was sunk with large stones, in six feet of water, and the fuze—20ft. in length—lit. In a few minutes a splendid explosion followed. A fine column of water, mixed with débris, was thrown up some 60ft. into the air, the mass below seething and foaming. One large stone, weighing about $1\frac{1}{2}$ cwt., was thrown far above the rest to a height of about 100ft. On returning to the scene of the explosion there was nothing visible but a mass of muddy, troubled water, with fragments of timber and a number of dead fish floating down with the stream.

The power exhibited by the new explosive, together with the security and safety with which it may be handled or stored, must render it a successful rival to nitro-glycerine and other of the dangerous compounds at present used by miners. Whether it undergoes any change after being kept for any length of time we are not informed; but, if this question is satisfactorily answered, as we believe it can be, a long-felt want will be supplied.

NEW CEMENT OR ARTIFICIAL STONE.

MANY attempts have been made of late years to manufacture artificial stone, some of which have been attended with more or less success, as far as regards the production of large blocks, but have rarely succeeded for the purpose of moulding or making medallions and mosaics, or for emery-wheels, oil-stones, and articles of a similar character. In almost all cases, too, the agency of heat has been required for producing articles in artificial stone, and this has been found very objectionable, as well as expensive. Attention is called to some specimens of artificial stone in the shape of medallions, mosaics, emery-stones, oil-stones, imitation marble, &c., which have been produced in a simple manner by moulding, without the agency of heat, and which appear to partake in every respect of the nature of the stones they are intended to represent. These specimens are formed from natural materials, agglomerated by means of a cement, the invention of M. Sorel, a French chemist, well known in connection with the introduction into this country of the galvanised iron process. This new cement is formed of basic oxychloride of magnesium (carbonate of magnesia and chloride of magnesium), either pure or mixed with other substances. The cement may be made in two different ways—viz., either by diluting or tempering magnesia, which may be more or less hydrated and carbonated, with a solution of chloride of magnesium more or less concentrated; or by adding to the magnesia chloride of magnesium in a dry state, and employing water to form the cement. The cement thus produced is specially white and hard, and may with advantage be used in the place of some of the best cements. It may be made to take any colour, and be moulded like plaster. It possesses the same hardness, and will receive the same polish as marble, thus enabling it to be employed in the manufacture of artificial marble, mosaic pavements, and statuary. Imitation ivory can be made from it for making billiard balls and other similar articles, also medallions, buttons, &c. The agglomerative properties of the cement are of the highest degree, thus enabling the waste and otherwise worthless materials of quarries to be utilised; one part of the new cement will agglomerate thirty parts of sand, chalk, and other materials, the process being of a purely chemical nature. By this means, where building materials are not present, they can be made at a very low cost. Excellent mill-stones and grind-stones can be formed by agglomerating by this cement emery, sand-stone, and other hard materials.

PARLIAMENTARY NOTES.

METROPOLITAN WATER BILL.—Mr. Bruce moved the second reading of this bill. It was his intention to refer the bill to a select committee, but its leading provisions were to provide a constant supply under certain conditions laid down, and to enable the Metropolitan Board of Works to purchase the waterworks of the various companies on behalf of the public, and in case of objection being made, the objection to be laid before the Secretary of State for the Home Department, who should have power to decide the matter. The bill also contained provisions providing for the complete filtration of the water.—Mr. Crawford said the right hon. gentleman had himself condemned the bill. If the right hon. gentleman dealt with this bill as graciously as the Board of Trade dealt with the Gas Bill, all difficulty would have been removed, and this bill would have stood in as favourable a position as did the Gas Bill. He wished to inform the House that since he manifested his opposition to the bill he had been made a director of the Kent Waterworks, but that circumstance should not alter the ground of his opposition, for he still opposed it, because he did not believe it would do what it promised, and proposed no efficient authority to carry out its provisions. (Cries of "Divide.") In order to settle with the companies, the whole spirit of the measure—compulsory purchase—had been taken away. ("Divide.") The bill contained such conditions and restrictions that London would not get one drop more water under it than it obtained now. The Government had treated this question in a way that was neither dignified nor consistent. He moved that the bill be read a second time that day six months. Sir H. Hoare moved that the debate be adjourned.—Mr. Ayrton hoped the House would allow the bill to go before a select committee. The measure was introduced for affording a constant supply of water to the inhabitants of the metropolis, and it was impossible for the House itself to come to any conclusion as to the mode in which that object was to be attained.—After some discussion, the House divided on the motion for the adjournment of the debate:—Ayes, 57; Noes, 87.—Mr. Bruce, in deference to strong appeals addressed to him by various metropolitan members, consented to postpone the further discussion of the bill until the following day.—On the resumption of the adjourned debate on Friday last, Mr. Bruce said the Government intended to adopt the suggestion made in the course of the debate the previous night, and abandon this bill and introduce another bill which would adopt some of the amendments suggested by hon. members.—Mr. Crawford expressed his satisfaction at the course adopted by the Government.—The order was then discharged and the bill withdrawn, and the substituted bill was brought in and read a first time.

POTTERY IN THE INTERNATIONAL EXHIBITION.—Mr. A. Brown, on Thursday week, asked the hon. member for Exeter if it was a fact that the gentleman entrusted with the drawing up of the report on pottery departments of the International Exhibition of 1871 was a member or employé of one of the principal exhibiting firms; and, if so, whether the Royal Commissioners would allow the fact to be stated in the report on the subject.—Mr. Bowring said the hon. member was not quite correct in supposing that any one gentleman had been entrusted with the drawing up of the report of the porcelain department of the Exhibition. The fact was that the task had been divided into seven sections, and that a number of gentlemen had been appointed reporters to those sections. One of them, Mr. Arnaud, was in the employ of the Messrs. Minton, Campbell, & Co., one of the competing firms. He was a man of great artistic taste and experience, having prepared valuable reports of the porcelain departments of the Paris Exhibition of 1855 and 1867, and under the circumstances he was of opinion that the Commissioners were fully justified in introducing him. With regard to the second question, he had no objection to make it publicly known that Mr. Arnaud was so connected, and he would mention the subject to-morrow morning at a meeting of the Commission, of which he was a member.

Building Intelligence.

CHURCHES AND CHAPELS.

Banbury.—On Thursday week the foundation-stone of a new Wesleyan Chapel was laid at Grimsbury, a suburb of Banbury. The new building is to cost £2,200. It will accommodate 350, and includes a commodious school-room, which will afford accommodation to 450 scholars. Mr. Albert Kimberley, of Banbury, is the builder.

Hackney.—On Thursday week, the 25th of May, the foundation-stone of a new church to be erected at the north end of Goldsmith's-row, Hackney-road, was laid by Richard Foster, Esq., of Upper Clapton. The office for laying the foundation-stone of a new church was said by the Rev. George Morris, M.A., the incumbent of the district, assisted by several clergymen and by the members of the choir of S. Mary's Church, Haggerston. Addresses were delivered by Bishop Claughton, of Colombo, Archdeacon of London, and by Mr. Foster; and after the ceremony there was evening service at the parish church of S. Mary, when a sermon, having reference to the occasion, was preached by the Bishop of Colombo. The church will consist of nave and aisles, apsidal chancel and aisles, and bell turret on the gable at the east end of the nave. It will be of brick with coloured ornamental bands externally and internally, and is intended to accommodate between 500 and 600 worshippers. Mr. Francis T. Dollman, of Adam-street, Adelphi, is the architect. and Messrs. Dove, Brothers, Islington, are the contractors.

Lichfield.—S. John's Hospital Chapel, Lichfield, which has recently been restored, was reopened for divine service on Sunday. The date of the original foundation, as also of the founder, is extremely doubtful; but Bishop Smyth, in the days of Henry VII., according to Leyland, began a new foundation at this place. The chapel was built of stone, and was the ancient chapel of the Priory before the date of Bishop Smyth's foundation. It was of the Early Decorated period, and consisted of a nave only, 64ft. long by 18ft. wide, to which in the year 1829 was added an aisle with a gallery. In the work of restoration now completed it was found necessary to strengthen the walls north and south—the former being made its original thickness—the gallery was removed, and an arcade in three bays, which carries the wall above, and separates the aisle from the nave, has been constructed. The restoration has been carried out from the designs and under the superintendence of Mr. W. H. Crompton, architect, by Messrs. Beckett & Thorneloe, of Lichfield.

London.—The benefices of S. Olave, Hart-street, and All Hallows', Staining, were united a year ago. The tithes of All Hallows' amount to £1600 a year, and with these and the proceeds of the sale of the site of the church and parsonage, the Grocers' Company propose to build and endow three other churches in some poor and populous districts in London. Since the union of the benefices S. Olave's has undergone considerable alterations. The old pews have been entirely swept away, and the edifice has been furnished with oak sittings. The pulpit, which is beautifully carved, is the one which was removed from S. Benet's, Gracechurch-street, when that church was pulled down a few years ago. Some of the ornaments from All Hallows', Staining, have been transferred to S. Olave's. The work has been carried out by Messrs. Gibson, Brothers, contractors, at a cost of £800, Mr. Blomfield being the architect.

Newbold.—The Bishop of Manchester consecrated the new church of S. Peter, Newbold, Rochdale, on Saturday week. The new church, the foundation-stone of which was laid in August, 1869, is Pointed Gothic in style, boldly and vigorously treated to suit the rough random rubble-stone and red brick, of which materials the church is mainly built. The walls are of rubble, and stock brick is introduced in the quoins, bands, strings, buttresses, arches, &c. The tower is at present carried only a little above the level of the aisle walls, but the spire will ultimately be carried to a height of about 135ft. There is a spacious west porch or narthex. At the north-west angle of the church is the baptistery. The roofs are slated in two colours, arranged in patterns, and finished with red tile ridge crestings. On plan, the church comprises nave, north and south aisle, apse, and baptistery. Accommodation is provided for 670 persons. The several contracts amount to about £3,750, and there are no "extras" beyond the amount of the contracts. The foundations were put in by Messrs. Stopford & Cordingley; the shell of the church was built by Messrs. Rogers & Booth, of London; the fittings and finishings have been carried out by Messrs. J. Robinson & Son, of Hyde; the pulpit (of Caen stone), and font, and all the carved figure-work in spandrels and tympana, were executed by Messrs. T. R. & Evan Williams, of Manchester, and the carved capitals and altar cross by Messrs. Earp & Hobbs. The architects are Messrs. Medland and Henry Taylor, of Manchester.

Normanton.—On Monday week the foundation-stone of a new Methodist chapel was laid at Normanton, near Leeds. The sitting accommodation to be offered by the new building is 250, and the cost will be about £600. The contract has been taken by Mr. W. Denison, of Normanton, from the designs and under the superintendence of Mr. Wm. Watson, of Wakefield, architect. The building is to be faced with red bricks, relieved with white and blue bands, arches, and stone dressings. The size of the chapel is 47ft. 6in., by 30ft., and 32ft. high to the collar beam.

Sheffield.—A new Baptist Chapel in Glossop-road, Sheffield, has recently been opened. The style is Gothic, the principal material used being stone. The façade presents a high gable, on the town side of which is a tower 150ft. high, and in the centre is the principal entrance. In the interior, the whole of the wood-work is of pitch-pine, polished. The chancel, raised three steps high, is laid with Maw's tiles. The pulpit is of pitch-pine, elaborately carved, this, as also the whole of the stone carving, being executed by Mr. Harry Hems, of Exeter. Behind the pulpit is the baptistery, over which is a stained glass window. On the left of the chancel is the organ gallery. At the back of the chapel, and approached either from it or from the Sherwood-road, are the school and class-rooms, and the keeper's house. The principal school-room is 40ft. by 24ft. 6in., and is on the ground floor. Messrs. Innocent & Brown, of Prior's-court, Sheffield, are the architects, Mr. William Dickinson acting as clerk of the works, the works being carried out by various local contractors, at a total cost of £6,500.

BUILDINGS.

Brackley.—The foundation-stone of the new church schools was laid at Brackley last week. The plan of the school buildings is in the shape of the letter H, the right and left limbs forming the boys' and girls' school-rooms, the sizes respectively being 67½ feet by 21 feet, and 50 feet by 18 feet. The middle or connecting bar is formed by the infants' school, which is 40 feet by 20 feet. The architecture of the building dates about the end of the sixteenth and the beginning of the seventeenth centuries, a period that produced the best examples of English domestic architecture. The walls are built of a most excellent stone from Mr. Taylor's quarries near the site, the dressings being of Bath stone. The porches and upper portion of the centre gable are half timbered in real oak framework, and it is intended to dress the upper portions of the two residences in the same manner. The roofs are covered with Staffordshire tiles, laid in diaper work with bands. The work is being carried on by the local builder, Mr. Wm. Hawkins, under the plans and superintendence of Mr. C. S. Bather, architect, of Shrewsbury. The cost of the whole of the buildings when complete will be between £2,000 and £3,000.

London.—New offices have recently been erected in Bartholomew-lane for the Estates Company. The new building is situated between the offices of the Alliance Bank and the Alliance Insurance Company, and is a continuation of the adjoining elevation. The façade is in Portland-stone, and is about 30ft. in length. Mr. E. A. Greening is the architect, and the contractor was Mr. W. Henshaw.

Osaka, Japan.—A building has recently been finished in the city of Osaka for the purposes of the Imperial Mint of Japan. The building, which is well situated facing the Yodo river, on the outskirts of the town, is built of a fine blue stone, and the foundation-stone was laid in January, 1869. The building has been erected entirely by native labour, from a design by Mr. T. Waters, of Jeddo, official engineer and architect to the Japanese Government.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—T. W. C., C. K., G. F., D. J. W., J. H., G. B., J. & W., Greek Art, E. W. T., J. H. H., J. H. M., E. B., W. & H., E. M. B., J. & S.

The Press and the Architects' Conference.—F.R.I.B.A. and E. T.—Thanks for your letters. We think, however, there is no necessity for inserting them, as we have good reason to believe that our article last week has had its desired effect, and the policy of excluding reporters will not be repeated.

Correspondence.

ARCHÆOLOGY IN ROME.

To the Editor of the Building News.

Sir,—Can you allow me a corner of your valuable space to answer a host of inquiries, which I find it impossible to answer in detail each separately? As most of my correspondents are readers of your paper, and the subjects of these inquiries are of general interest, I do not think your space will be wasted.

1. What have you been doing in Rome this season?
2. What has the "British Archæological Society of Rome" been doing with the help of the "Roman Exploration Fund"?
3. What has the Italian Government been doing in the way of Archæology?
4. What have other people been doing in the same matter?
5. What is to become of the Museums in Rome: are they to be locked up more rigorously than before, or to be made more accessible?
6. What are the future prospects of Archæology in Rome under the new Government?
7. What about your historical photographs? Have you been going on with them? Are they likely to be permanent? Are they really of so much importance as you fancied?

To answer all these queries in detail would take a great deal more space than you can give. I have arranged with the Royal Archæological Institute to give a lecture on the subject on the 7th of July, when the season for excavations of Rome will be over, and I hope to have some copies of the lecture printed off separately to send to my friends, as I have been accustomed to do for some years past. But I may say briefly (No. 1 and 2) that from various causes more important excavations have been made in Rome this season than have perhaps ever been made before in the same space of time. (3) The Italian Government have renewed the Commission of Archæology, and have placed Signor Rosa at the head of it, at the request of the Emperor of the French, when he sold them the French part of the Palatine Hill. They have taken possession of the Pontifical part of that hill, and have ordered the whole of the Palatine Hill with the slopes round it to be excavated on the same plan as at Pompeii, where, of late years, the excavations have been conducted in the best possible manner. (6) They do not propose to carry the Government excavations any further, but are willing to give every facility to others doing so, if the money is forthcoming to make compensations for injury done to property and to carry on such works. (4) A new city of Rome is being built on the high ground on the eastern side, near the railway station. A building company have bought a large tract of ground in that direction, extending nearly from the Porta Maggiore to the Porta di S. Lorenzo. The manager of the company has begun examining all the ground in search of the foundations of old buildings, of which that ground is full, and he proposes to use them to build upon, instead of making new foundations.

(5) The Vatican Museum has been closed by the Pontifical authorities this season, but that cannot last long; in future all the museums will be quite as easily accessible as they have ever been before.

(6) Our society, chiefly under my direction, has been going on vigorously with the excavations previously commenced, and has made some fresh ones of importance, especially on the Viminal-hill. The results obtained are extremely interesting, and they now amount to demonstrations of the truth of

what were at first called "absurd conjectures." Mr. Burn, in his recent work on Rome (which is extremely learned and valuable in its way), has shown that he is no archæologist, and he would have acted more wisely in avoiding that branch of the subject. He has several times contradicted me in notes, and I shall be obliged in self-defence to answer him, and demonstrate in many instances that he is wrong. In saying that the Wall of Servius Tullius is of earlier character than the Wall of Romulus he is altogether misled. He also places too much faith in Signor Rosa, whose archæology is not to be depended on, and he seems to ignore all the investigations of the last few years, which have been very important. His latest authority is Canina, who has been dead for years, and others have mounted on his shoulders. (7) My drawings, plans, sections, and photographs, are my silent witnesses of the truth of my statements of facts, and the members of the society are my living witnesses to the same facts. My photographs are important historical witnesses, and I have every reason to believe that they will be permanent, as the cause has been discovered why photographs often fade and the remedy for it, which I can explain in another letter, if you can find room for it.—I am, &c., J. H. Parker.

Ashmolean Museum, Oxford, May 25, 1871.

STAINED GLASS.

Sir,—In the very able article entitled "Stained Glass at the International Exhibition," which appeared in your issue of the 26th ult., the following passages occur with respect to the specimens exhibited by Messrs. Heaton, Butler, and Bayne:—"The truth is, that this character of work is utterly unsuited to be executed upon glass, except it be upon large sheets of glass uninjured by any division." Since, in the course of manufacture, each piece undergoes a special process before conjunction, I believe it impossible to produce the beautiful play of colour noteworthy in these "exquisite pictures" by such a *modus operandi*. Also: "There is another fundamental error in these works—namely, that they are in perspective, showing landscape distances, rapid foreshortening of figures, &c." If this be deemed an error it is one sanctioned by the practice of Raphael, Da Vinci, Palissy, Dirk of Häarlem, and I think I may include Dürer, and many masters of the French, German, and Lorraine schools. "Again, the colour, delicate as it is, is hardly satisfactory, as the sky-blue knights and golden-haired damsels, with the light shining through, are ghostly and unreal." This objection may be urged against any work of painted glass, the effect produced by the sunlight transmitted through a painting in plane is no less spectral and unreal than the transmission of the same light through a work in perspective: nor is a diaphanous hat any more ludicrous than the green transparency representing the garbed body of the great Canterbury pilgrim. For the candid exposition of the flagrant errors of the Munich glass, its ill-harmonised colouring, and meretricious design, all must acknowledge a debt of thanks. As for the attempted imitations of the old glass, combinations of promiscuous arms and legs united to strange bodies and unearthly heads, producing thereby a series of unique Frankensteins, without the jewelled depths, and the other numerous charms of colour which constitute the chief merits of the old work. Surely the time for such maudlin efforts has passed. To my eyes, the most charming specimens of stained glass—because the most natural and life-like—are those executed in Brussels by Caparoni. The light transmitted through them is toned and mellow, they seem truly

> Storied windows, richly dight,
> Casting a dim religious light,

and recal the golden age of stained glass when Raphael strove

> To add new lustre to religious light;
> Not of its pomp to strip the ancient shrine,
> But bid that pomp with purer radiance shine,
> With arts unknown before to reconcile
> The willing Graces to the Gothic pile.

The *cognoscenti* say: "Such treatment is inconsistent with the exigencies of the material." It may even be so; but let them produce anything equal in beauty to the fore-mentioned specimens, then, and then alone, are they worthy of all credence.—I am, &c., W. Bankes.

"EX LUCE LUCELLUM"!

Sir,—The gas-lamps on the east side of Regent's Park have lately been increased to double the number, at, of course, a considerable expense. It appears to me the same benefit might have been obtained in another way at the cost of a few shillings. In the ordinary gas-lamp but half the light comes downward and is of use; the other half ascends and is lost. If the half thus lost had been utilised in the park lamps, the added lamps would have been unnecessary. My plan would have been to put reflectors on the top of the original lamps of a simple but very effective description. I should have placed four pieces of burnished tin-plate over, and in shape and size exactly corresponding with, the four pieces of glass forming the pyramidal top of the lamp, with which they would be puttied in. These reflectors, hermetically sealed, having the glass below to defend them from smoke, would never tarnish or require renewing, and the expense would be a mere trifle. From the angle at which the glass is placed, the reflected rays would be well dispersed all round. Thus, it appears to me, would the now useless light lost skyward be turned to proper account, and the additional lamps have been altogether unneeded. Although there is some advantage in lighting, in the streets, the upper parts of the houses, as by the present lamp, yet I should think it preferable if all the public lamps had such reflectors. The gain to the pavement and road would be immense, both as regards convenience and beauty. With respect to the lamp-posts, I cannot but express my extreme surprise at the ignorant want of taste and lack of public spirit evidenced by the parish vestries in perpetuating the abominably ugly patterns of that darkest of "dark ages" in art, the Georgian period. From the raw material being so abundant and cheap in this country it might reasonably be expected that we should take pride in displaying good cast iron work for public purposes, and excepting the first cost of pattern a good design would not necessarily be more costly than a bad one. Unfortunately, we began badly, and the official mind having got into a groove it is next to impossible to get it out. We have abundant light now in fine art matters (thanks to the *Cole* giving the illumination), and it is most provoking to see still erected the deformities which belong to the "light of other days." Anything more absurd than the old pattern lamp-post of Regent-street and Langham-place—a bundle of spears surrounding a shaft which tapers downwards—was probably never seen. This and the other perversely bad designs at the West End should be collected for exhibition by the authorities at the International Exhibition, or else the South Kensington *Cole Olio*, as specimens of what to avoid, and in juxtaposition with examples of French design by Durenne and Fourment, Houille & Cie., as a contrast and lesson of what should be. How different that fine thoroughfare Portland-place would look if the street lamps were of fitting character! At present they are ugly in shape, are painted black, and scarcely any are standing perpendicularly. I would have them elegant in design, and either electro-bronzed, as in Paris, or enamelled of appropriate and pleasing tint, with perhaps a trifle of gilding, as befitting a wealthy quarter. The effect of the improvement would, I am sure, be surprisingly good. And if the parish is not disposed to do anything, I wonder the inhabitants or owners of the property should not effect for themselves so very desirable an alteration.—I am, Sir, yours, &c., P. E. M.

THE EMBANKMENT FOUNTAIN COMPETITION.

Sir,—Is it true that the two prizes in the above competition have been given to persons connected with the office of the Board of Works? If so, I can only say the award is open to grave suspicion of injustice. The second prize design, I hear, is one of preposterous nature, and was, moreover, submitted previous to the competition.—I am, &c.,

A Competitor and Victim.

STAINED GLASS AT THE INTERNATIONAL EXHIBITION.

Sir,—In your issue of last week you had a notice of the stained glass in the International Exhibition. Referring to our work, "J. P. S." observed, "We should like to know whether we may credit any member of that firm, or an artist employed by them, for the design." We beg to inform you that the subjects were designed by our Mr. Bayne, under the supervision of Mr. Alfred Waterhouse, and that the windows are intended for Eaton Hall, the seat of the Marquis of Westminster.—We are, &c.,

Heaton, Butler, & Bayne.

Garrick-street, Covent Garden, W.C., June 1.

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Increased Dock Accommodation for Liverpool.—The Mersey Docks and Harbour Board have decided to proceed with a plan for improved river approaches to their docks, at an estimated cost of £145,000. Under this plan the George's basin will be filled up, the landing stages lengthened and united, and a large additional space gained for the accommodation of traffic.

Intercommunication.

QUESTIONS.

[2234.]—**Mounting Tracings.**—Several methods for mounting tracings have been given, but not one as to the best article for making them adhere to the paper. Would any one oblige me with the information?—Assistant.

[2235.]—**Taking Out Quantities.**—Being some time ago appointed architect to a parish church, I was instructed lately to prepare a specification, quantities, &c., for sundry repairs. Four builders were selected by the churchwardens and two by myself, the quantities were sent to each, and the tenders opened in the presence of those tendering in the usual way. At a meeting held a week after the contract was signed, S. & B.—the one an estimating clerk and the other a surveyor—produced a copy of my quantities (how obtained they declined to say), and endeavoured to get the contract cancelled, because they said they could get some one to do it cheaper (5 per cent.), they using my quantities to make their estimate from. Leaving out of the question the taste of a subordinate using the prices of his firm in an attempt of the sort, I consider that practices like these are not strictly *en regle*, and should not be allowed to pass unchallenged. Never having met with a case of this description before, I shall be obliged with an opinion on the following points:—(1) Are not the quantities considered to be the property of the surveyor and the builders who pay for them, and is any person right in using them without their knowledge or sanction? and (2) what means ought to be adopted to compel the persons to give them up?—C. N. McIntyre North.

REPLY.

[2226.]—**Schools of Art Examinations.**—In a foot-note (§) to page 42 of the "Art Directory" is the following clause, which "J. H." will find bears on his question:—"A fee of not more than 2s. 6d. may be charged on each applicant for examination who is not a student in the class, to reimburse any extra expense the committee may be put to in providing a room."—W. J.

LEGAL INTELLIGENCE.

Important to Builders.—Mann *v.* Millett.—This was a claim, heard at the City of London Court last week, for 1½ hours' pay. The plaintiff, it appeared, had been working on some buildings in Tower-street, where he was discharged one evening, and told to walk to Houndsditch, and thence to London-wall, and was kept waiting for his money. Had he been paid in Tower-street he should not have claimed.—The answer was that the walk would not occupy ten minutes, and the claim ended after the discharge.—His Honour ruled that a man who is paid by the hour can claim a settlement every hour, and the money must be ready for him. He could not be asked to walk anywhere for his money. Whether the shop was a long or a short distance off did not alter the case.—The claim was allowed.

Builder's Claim Disputed.—Important to the Trade.—Munday *v.* Isaacs.—This case, recently heard before F. Bayley, Esq., Judge, in the Westminster County Court, and which lasted some hours, was an action brought by the plaintiff, a carpenter and builder, 79, Castle-street, Leicester-square, against defendant, Joseph Isaacs, clothes dealer, No. 319, Strand, to recover the sum of £29 4s. 6d., balance due for altering and fixing a new shop front, and doing other work connected therewith. Mr. Wright, barrister, instructed by Mr. Willis, of Leicester-square, conducted plaintiff's case, Mr. H. T. Roberts, of 12, Clement's-inn, appearing for defendant. £12 had been paid into Court. It appeared from the evidence on the part of the plaintiff that on the 20th of October last defendant spoke to him about some alterations and repairs being made on his premises, and according to his instructions a contract was entered into to do the same for £21, he undertaking to pay for all extras. As the work progressed, plaintiff suggested that the glass in the shop window-frame, which was in two parts, should be renewed, and one sheet of plate glass substituted, to which the defendant replied, "I leave it in your hands; you must do it as cheap as you can, and make it the best front in the neighbourhood;" adding he thought it should be a little wider. His wishes upon that, as well as in other instances, were acted upon, increasing his demand, in addition to the money received as per contract, which had been entirely broken by defendant's orders, to the sum he now sought, of which he understood that of £12 had been paid in.—In answer to his counsel, plaintiff said he paid out of his pocket £8 2s. 4d. for the shop window-glass, and charged that as an extra. He and his foreman were frequently at the work, and while there did more than the men, and charged 1s. an hour for each in the bill.—John Binney, the foreman, corroborated. There was a larger amount of work done than was mentioned in the original contract, and, as defendant directed, in quite a different style.—Mr. Arthur Allen, district surveyor of S. Martin's and S. Anne's, Soho, said he had examined the bill of the work done by plaintiff, and was of opinion that the charges were fair and reasonable.—Mr. Roberts, in reply, said that he should call witnesses to show that very little extra than what was named in the contract, which would be produced, had been done, and for that little his client, by his advice, had paid the sum named into court.—The defendant then deposed that he only gave orders for the work to be done as he supposed it was entered in the contract by plaintiff, who agreed to put the glass spoken of in for £5 or £6, and which, being one of the extras, he had, he thought, paid more in than he ought to have done in liquidation of the demand made on him.—Mr. W. Laxton, surveyor, and author of "Laxton's Builders' Price-book," stated that he considered the plaintiff, on taking out the money paid in, to have been amply paid, as it was certainly only a job; and as for 1s. an hour being charged for plaintiff and his foreman, he could not see why they should be entitled to more than 8d., the same as the workmen. He estimated the extras as described, including the glass, to be £9 9s. 7d.—Several Builders having been examined, who all concurred in Mr. Laxton's prices, Mr. Wright proceeded to address the Court. He observed that, as a general rule, no cases were so contradictory in evidence as running down and builders' cases, of which that was a proof, although he could not help remarking that plaintiff's charges seemed to him to be reasonable; but not being exactly according to the contract he would submit that when people made contracts and required work done not mentioned therein, they ought to pay.—His Honour thought that from the facts disclosed plaintiff had, himself, unsolicited, broken his contract, for which, as defendant could not be held liable, his decision would be for the latter.—Judgment entered for defendant.

WATER SUPPLY AND SANITARY MATTERS.

The Metropolitan Water Supply.—Attention is called by the Registrar-General to Dr. Frankland's report upon the quality of the Metropolitan water supply during last month. In this we are told that water was delivered by the Lambeth Company containing fungoid growths and moving organisms; by the Chelsea and Southwark Companies slightly turbid, and containing moving organisms, some of which in the Southwark Company's water were visible to the naked eye; the samples drawn from the mains of the other companies were clear and transparent. The general quality of the Thames and Lea waters showed a marked deterioration, due doubtless to the recent heavy rains; the proportion of organic matter showed an average increase of 70 per cent. upon the previous month. The New River water contained only half as much organic matter as the Thames waters. The Kent Company's water, drawn exclusively from deep chalk wells, alone maintained a high degree of purity as regards organic matter. We see it is stated that the question of water supply to the metropolis is likely once more to become the subject of Parliamentary inquiry, and that the various companies, who have now a monopoly in their hands, will have to show that the quality of the water supplied is the best that can be had, and the service equal to the exigencies of the public.

Exeter.—The Exeter Sewage Manure and Farming Company have agreed to submit to the condition imposed by the Town Council on Wednesday week, as to the non-irrigation of land within two miles of the Guildhall. The directors of the Company were last week offered lands beyond the two-mile radius which will suit their purpose admirably, and at once decided upon complying with the Council's conditional after-thought. The last obstacle seems, therefore, to have been removed. It is intended to proceed with the work as speedily as possible, as twelve months must elapse before they can be brought into working operation.

Arundel.—At the request of the Arundel Town Council, the Duke of Norfolk has consented to allow the town to be supplied with water from a splendid lake in his grounds, known as Swanbourne Lake, which already supplies all the water used at the Castle. The Duke has also offered to construct, at his own expense, the necessary tank, and to lay a certain portion of the pipes. The supply will be constant and free of cost.

Birmingham.—The Birmingham Corporation has under consideration a scheme to supply the town with water from the rivers Elan and Claerwen, in Cardiganshire and Radnorshire, a distance from Birmingham of over eighty miles.

Dr. Letheby and the London Water Companies.—In the debate in the House of Commons on Tuesday week on the water supply of London, Mr. Kay-Shuttleworth is reported to have said that "Dr. Letheby was not an independent authority. He had for many years been the paid analyst of the water companies, and his evidence must partake of a certain bias." Dr. Letheby wishes it to be stated that this statement is entirely without foundation, inasmuch as he neither is now, and never was, the paid analyst of the water companies.

MEETINGS FOR THE ENSUING WEEK.

Monday. *Royal Institute of British Architects.* "On Works at the Liverpool Exchange and adjacent Public Buildings." By Mr. Th. H. Wyatt, President. 8 p.m.
Society of Engineers. "On the Timbering of Trenches and Tunnels, applicable to Sewerage or Railway Works." By Mr. C. Turner. 7.30 p.m.
Tuesday. *Institution of Civil Engineers.* The President's Annual Conversazione. 9 p.m.
Thursday. *Society for the Encouragement of the Fine Arts.* "On Gems and Precious Stones." By Professor Tennant. (King's College) 8 p.m.

Our Office Table.

Proposed Annual Autumnal Exhibition of Oil and Water Colour Paintings at Liverpool.—We understand that it is the intention of the Liverpool Corporation to re-establish an annual exhibition of oil-paintings and water-colour drawings. The former annual exhibitions were of considerable importance, but were discontinued about seven years ago, owing to some dissensions among the promoters. That a town so wealthy and of such magnitude should be without its art exhibition has long been felt to be a discredit. Accordingly a vigorous effort has been made by Messrs. Samuelson, Rathbone, and Picton, members of the Town Council, and there is every prospect of the exhibitions being successfully revived. They will be held in the Free Library and Museum, and works intended for exhibition must be forwarded the week after the close of the Royal Academy.

The Proposed New Street from Oxford-street to Charing-cross.—At the meeting of the Metropolitan Board of Works on Friday last, Colonel Hogg in the chair, it was reported that the Works Committee had considered a memorial from the promoters of the Euston, S. Pancras, and Charing-cross Railways, asking the Board to contribute one-half of the estimated cost of the new street proposed to be formed in connection with their line from Oxford-street through Leicester-square, that the Committee are of opinion that the formation of a new street from the Tottenham-court-road to Charing-cross would be so evident a benefit and advantage to the public that the Board would be justified in contributing one-half of the net cost of the new street after the recoupment from the sale of surplus lands, provided the railway included in the road so much of the surface of Leicester-square as the railway will pass under, the expenditure of the Board not to exceed the sum of £200,000. Mr. Runtz said this street had been contemplated for thirty years. It was a most desirable improvement, and if the Board had to construct it without the help of the railway company it would cost them £500,000. If the Board did not take advantage of this opportunity, they would be compelled at some future time to carry it out at their own cost. Mr. Lloyd moved an amendment that the question be deferred until after the approaching elections for members of the Board had been decided. After some discussion and a division the report of the Committee was adopted.

The Eyes of the Evangelists.—Mark Boyd, in his "Reminiscences of Fifty Years," tells the following anecdote:—A new church had been erected in Bishop Blomfield's diocese, and a day was appointed for the consecration. The Bishop having received several letters, some anonymous, attacking the taste of the architect, as they alleged, for introducing gewgaws, both externally and internally, resolved to judge for himself, and accordingly drove down two hours previously, having desired the architect to meet him. His lordship could find nothing outside the building to question, and then began his inspection of the interior, with which he was also satisfied; but just as he had reached the pulpit, he looked up at four wooden images. "What, Mr. Architect, do *they* represent?"—"The four Evangelists, my lord."—"They look to me asleep."—"Do you think so, my lord?"—"I do." The architect, turning round to one of his men working in a pew, called out "Smith, bring your chisel, and open the eyes of the Evangelists."

Waterford Harbour. — The Waterford Harbour Commissioners have given instructions for a survey to be made at the mouth of the harbour, in order to bring the question of the removal of the bar before the Board of Trade. The estimated cost of such removal is £50,000. To meet this expenditure, it is proposed to levy dues on all foreign vessels making the harbour a port of call.

London Street Nomenclature.—The Metropolitan Board of Works has decided to make the following alterations in the names of streets within their jurisdiction:—Gatton-road, Peckham, to be called Tilson-road; Clarendon-street, Somers-town, to be re-named Underhill-street; and York-street, Battersea, to be re-named Este-street.

Leicester Architectural Society's Annual Excursion.—The annual summer meeting of the Leicestershire Architectural Society will this year be held at Uppingham, in conjunction with the Northamptonshire Architectural and Archæological Society. The meeting will extend over two days, Tuesday and Wednesday, the 6th and 7th of June. The proceedings will commence with a public meeting, when an inaugural address will be given by the president, the Rev. Lord Alwyne Compton, and a paper on "The Bishops at Lyddington" will be read by the Rev. T. B. Rowe. In the afternoon an excursion will be made to Ayston, Preston, Glaston, Bisbrooke, Lyddington, and Stoke Dry. At eight o'clock in the evening a public meeting will be held in the large school-room, when papers will be read by Sir Henry Dryden, Bart., the Rev. T. H. Hill, rector of Cranoe, and the Rev. George Ayliffe Poole, vicar of Welford. On the following day several places of great interest will be visited, including Seaton, Harringworth, Laxton, Blatherwycke, Bulwick, Deene, Deene Hall, Kirby Hall, and Rockingham Castle.

STATUES, MEMORIALS, Etc.

The Monument to General Outram.—The full-length bronze figure of the late General Outram was on Wednesday hoisted on to the pedestal erected for it within the last few days in the ornamental garden on the Thames Embankment, near Charing-cross-bridge, and it will shortly be uncovered.

The Late Lord Derby.—At a meeting of the executive committee of the Lancashire Penny Memorial to the late Lord Derby, it has been decided to devote the whole of the money collected (about £300) to the erection of a statue in memory of the late Earl, and to re-open the subscription-list without any limitation whatever. The site chosen is the park presented to Preston, in 1865, by the late Alderman Thomas Miller. It is situated on the north bank of the River Ribble.

Chips.

The London School Board on Wednesday resolved upon the appointment of a consulting architect and surveyor, at a salary of £500 per annum.

The Poor Law Board has sanctioned an outlay of £400 for new lavatories at the Hackney Workhouse.

The church of Winterborne Monckton, Wilts, was reopened on the 25th ult., after restoration.

In Liverpool a public meeting for the purpose of forming a company for providing suitable dwellings for the labouring classes of that town and port was held at the Law Association Rooms yesterday. The Earl of Derby presided.

The new pier at Portobello, of which a description appeared in the Building News a fortnight ago, was opened on Tuesday week.

The foundation-stone of a new Roman Catholic College was laid on Tuesday week, at Clones, by Cardinal Cullen.

The *Observer* contradicts the rumour that there is an idea of placing the Mint on the Thames Embankment. The site which the Government proposes to adopt for the building is, it states, in Temple-lane.

A stained-glass window is to be placed in Durham Cathedral, in memory of the late Judge-Advocate General.

The Bishop of Manchester consecrated a new church at Bolton on Thursday week.

PERSONAL.

The late Chairman of the City Lands Committee of the Corporation of London, Mr. Robert Taylor, has been presented with a handsome drawing-room clock, as an acknowledgment of his valuable services during the past year.

Earl Cowper has authorised the Council of the Working Men's Club and Institute Union to arrange for the annual gathering of the members of their affiliated institutions at his beautiful park at Panshanger.

Mrs. Eliza Foulston, widow of the late Mr. John Foulston, architect, has recently presented a large donation to the funds of the National Lifeboat Institution. Mrs. Foulston's gift will not only cover the cost of a lifeboat, but will pay for the erection of the contemplated new lifeboat station at Sunderland.

Mr. J. R. Harding, the surveyor to the Romford Local Board, has been appointed engineer and surveyor for the town of Epsom, Surrey, at a salary of £200 per annum, with the privilege of being allowed to take private practice.

Mr. C. J. Phipps had the honour on Thursday, the 25th ult., of submitting to H.R.H. the Prince of Wales, at Marlborough House, the designs which he has since sent to the Government at Copenhagen in competition for the New Opera House, to be erected in that city.

Mr. Henry Graves, the well-known print publisher, has sent a gift of engravings for the walls of the Asylum for Idiots, to the value of 100 guineas, this being his second gift to the asylum.

Timber Trade Review.

PRICES, May 31.—Per S. Petersburg standard:—Gothenburg first and second quality mixed yellow, £7 5s. to £10 10s.; ditto first and second quality mixed whitewood, £8; ditto third quality yellow, £7 15s. to £9; Wifsta Warf third yellow, £7 5s.; Christiana second yellow battens, 2½ × 6½in., £7 to £7 10s.; ditto third quality yellow battens, £6 10s.; ditto first quality white, £7 10s.; ditto common quality whitewood, 2½ × 7 and 6½in., £3 15s. to £4 10s.; Quebec first quality bright yellow pine, 2in., £15 to £15 10s.; ditto third quality bright yellow pine, £9 5s. to £9 10s.; Wyburg first quality mill-sawn yellow, 3 × 9in., £9; ditto 2½ × 7in., £9 5s.; Dram first quality yellow, £6 5s. to £6 10s.; ditto first quality whitewood, £5 15s.; ditto short lengths, £4 7s. 6d.; ditto third quality yellow, £5 15s.; ditto third quality whitewood, £5 5s.; Kragero first and second quality mixed yellow, 2½ × 7in., £7 10s. to £7 15s.; short length, £6 5s.; ditto 2½ × 6½in., £6 5s.; short lengths, £5 10s.; ditto third quality. £5 15s.; ditto first and second quality mixed whitewood, £5 15s. to £6 5s.; Husum third quality yellow, 3 × 7in., £7.10s.

At per 120 12ft. 3 × 9in.:—S. John's unsorted spruce, £11 10s, to £13 10s.; ditto ends, £10 10s.; Christiana second quality yellow, £12 15s. to £13 5s.; Quebec first spruce, £16 to £18; ditto second quality, £13 10s.; ditto third quality, £12 to £13 5s.; ditto fourth quality, £11 10s.; Miramichi unsorted spruce, £13 10s.; Sannesnnd first quality yellow, £19 15s.; ditto whitewood, £18 15s.

Trade News.

TENDERS.

BOROUGH.—For the erection of a warehouse in Southwark-street, Borough, for Messrs. J. H. Bennett and Co. Mr. W. Seckham Withington, architect, 135, Cheapside. Quantities by Messrs. Linsdell & Giffard:—

Fish	£2850
Asbby & Sons	3170
Eaton & Chapmau	3167
Henshaw	3147
Perry & Co.	3129
Mark	3125
Rider & Son	3120
Elkington (accepted)	2922

CITY.—For alterations and general repairs to No. 33, Aldersgate-street. Mr. H. Winstanley, architect:—

Patman & Fotheringham	£348
Beeton	335
Pritcbard	327
Sewell & Son	313

DERBYSHIRE.—For the erection of a parsonage-house at Holmersfield for the Rev. Thomas Hirst. Mr. S. Rollinson, architect, Chesterfield:—

Excavator's, Mason's, Bricklayer's, Slater's, Plasterer's, Smith's, and Founder's Departments:—

Tomlinson	£797
Staveley	700
Wright & Boler (accepted)	670

Carpenter's, Joiner's, Plumber's, Glazier's, Painter's, and Stainer's Departments:—

Margerrison	£415	10	0
Marshall	410	0	0
Elliott (accepted)	403	0	0

EDMONTON.—For Edmonton main drainage, Middlesex. Mr. G. Eedes Eacchns, M. Inst. C.E., engineer. Quantities supplied by Mr. Driver:—

Waller	£47,682
Webster	44,000
Stiff	41,000
Parnell	40,089
Kyan & Co.	39,918
Walker	38,621
Hill, Keddell, & Waldram	38,566
Anderson & Dunmore	36,425
Bloomfield & Morris	35,975
Ritson	34,750
Wainwright & Wilson	33,880
Marshall	33,600
Riley	33,500
Pearson	33,333
Haynes	33,000
Brown	32,000
Neave	31,830
Moore*	31,730
Chappell	29,950
Sibsey (accepted)	28,124
Wigmore	27,700

*Exclusive of work under the New River.

HOLBORN. — For rebuilding the Branch Bank for the London and County Banking Company. Mr. C. Jocelyn Parnell, architect. Quantities supplied by Mr. James Schofield:—

Simpson	£6,660
Conder	6,575
Hill & Sons	6,573
J. Perry & Co. (accepted)	6,501

PIMLICO.—For residences and boys' schools for S. Barnabas, Pimlico. Mr. F. W. Hunt, architect.

	Schools.			House.		
Richardson	£2481	18	9	1707	14	6
Jackson & Shaw	2281	0	0	1592	0	0
Haylock & Son*	2136	0	0	1480	0	0

* Accepted.

PLAISTOW.—For school finishings, Methodist Free Church, Plaistow. Mr. F. Boreham, architect:—

Harrop (accepted)	£90

S. GEORGE'S-IN-THE-EAST.—For paving work in Old Gravel-lane, Chapman-street, and other parts of the parish:—

Rutley	£2405
Booth	2325
Griffiths	2384
Mowlem	2360
West (accepted)	2295

SWANSEA.—For re-erection of premises at High-street. Mr. Thomas Davies, architect.

Davis & Morgan	£800
Thomas Watkins & Jenkius	770
Morgan	624
Rees	539
White (accepted)	500

SYDENHAM.—For repairs to the water towers at the Crystal Palace. Mr. C. H. Driver, architect. Quantities supplied by Mr. T. Nixon:—

Laing	£3880
Chappell	3500
Dowus	3499
Brico	3480
Nixon & Son	3396
Jackson & Shaw (accepted)	3193

SYDENHAM.—For building villa residence on the Crystal Palace Park estate. Mr. John Norton, architect, 24, Old Bond-street, W.:—

Peskett & Taylor	£2430
Nigbtingale	2214
Dover, Dowel, & Co.	2301
Cooke	2250
Pollard	2235
Smith	2198
Heath, jun.	2189
Cooke & Green	2178
Taylor	2126
Capps & Ritso	2110
Gooding	2004
Watson, Bros.	1930
Hughesdon	1930
Whiting	1919
Crossley	1898
Waterson & Co.	1880
Crook & Wall	1845
Moore & Grainger	1705

WINCHESTER.—For the erection of Guildhall, police-station, museum, and other buildings at Winchester. Messrs. Jeffery & Skiller, architects, Hastings. Quantities by Mr. Thos. Ladds, Tunbridge Wells:—

Blackburn	£13,350	0	0
Dowel & Co.	13,120	3	0
Smith	12,995	11	8
Brinton & Bone	12,350	0	0
Hagon	12,204	0	0
Harrison & Son	11,860	0	0
Macklin	11,689	0	0
Carter	11,280	0	0
Sollett	10,987	0	0
Dugay	10,900	0	0
Quick	10,874	0	0
Finch	10,525	0	0
Dallimore	10,520	0	0
Bull & Sons	10,496	0	0
Newman & Son	10,475	0	0
Wm. Sibley	10,327	0	0
Barnes & Moody	10,313	0	0

CONTRACTS OPEN FOR BUILDING ESTIMATES.

LEEDS, June 5.—For the erection of a new warehouse, in York-place. Stephen Ernest Smith, architect, 39. Park-square, Leeds.

BRADFORD, June 6.—For emptying, cleansing, and disinfecting all the middins, ashpits, privies, and cesspools in the said borough for a term of one, two, or three years. W. T. McGowan, Town Clerk, Town Clerk's Office, Bradford.

KING'S CLIFFE, June 5.—The trustees of the Law and Hutchenson's Charities are desirous of receiving tenders for converting certain premises, situate in the town of King's Cliffe, and county of Northampton, into schools, with master and mistress's houses attached. Kennedy & O'Donoghue, Architects, Bangor and Glasgow.

LANCASHIRE AND YORKSHIRE RAILWAY, June 13.—For the painting required at several of their stations. William S. Lawn, Secretary, Manchester.

WOOLWICH, June 7.—For the erection of an infirmary for Woolwich Union. Apply to Mr. E. B. Sargent, Clerk to the Guardians, Edward-street, Woolwich.

STOCKTON AND MIDDLESBOROUGH WATERWORKS COMPANY, June 5.—For the construction of a large additional service reservoir at Fighting Cocks. Thomas Hall, Secretary, Central-buildings, Darlington.

HALIFAX, June 6.—For the erection of a Methodist New Connection Chapel, on the site of the present Salem Chapel, North Parade. Hill and Swann, architects.

BATH AND OTHER BUILDING STONES, OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,

Quarrymen and Stone Merchants.

List of prices at the Quarries and Depôts, also cost of transit to any part of the United Kingdom, furnished on application to

BATH STONE OFFICE:

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The Penmoyle Sea-green Slates are specially adapted for Churches, Public Buildings, &c., &c.

(*Less costly than ordinary Gothic Tiling.*)

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In Railway Trucks, Docks, Gloucester:—

				Per 1,200 Slates.			Equivalent to per square
Best	Green Slates	14 by 7		2	17	6	16s. 6d.
Do.	do.	13 by 8		2	17	6	16s. 6d.
Do.	do.	13 by 7		2	5	0	14s.
Do.	do.	12 by 7		1	18	6	13s.
Do.	do.	12 by 6		1	7	6	11s.

Prices of large Sizes, Cost of Transit, Reference Testimonials, and Sample Specimens may be obtained on application to

MESSRS. RANDELL & CO., Corsham, Wilts.

Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street' Westminster.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

LEAD.							
Pig—Foreign	per ton	£17	17	6	£18	0	0
,, English W.B.	do	19	15	0	20	0	0
,, Lead Co.	do	18	15	0	19	0	0
,, Other brands	do	18	5	0	18	10	0
Sheet Milled	do	18	15	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or minium	do	20	10	0	0	0	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry.	do	25	6	0	26	0	0
,, ground in oil	do	0	0	0	0	0	0
COPPER.							
British—Cake & Ingot	per ton	71	10	0	72	0	0
Best Selected	do	73	0	0	74	0	0
Sheet	do	74	0	0	77	0	0
Bottoms	do	79	0	0	0	0	0
Australian	do	72	0	0	75	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	5	0	65	10	0
,, Refined ingot	do	70	0	0	72	0	0
Yellow Metal	per lb.	0	0	6⅝	0	0	7¼
IRON.							
Pig in Scotland, cash	per ton	2	17	6	0	0	0
Welsh Bar, in London	do	7	5	0	7	10	0
,, Wales	do	6	12	6	6	15	0
Staffordshiro	do	7	15	0	8	5	0
Rail, in Wales	do	6	15	0	7	0	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	10	0	7	15	0
Swedish	do	9	15	0	10	0	0
TIMBER.							
Teak	load	12	5	0	13	0	0
Quebec, red pine	,,	3	15	0	4	15	0
,, yellow pino	,,	4	5	0	5	5	0
Quebec oak, white	,,	6	0	0	6	5	0
,, birch	,,	3	10	0	4	15	0
,, elm	,,	4	0	0	4	10	0
Dantzic oak	,,	4	15	0	6	15	0
,, fir	,,	2	10	0	4	10	0
Memel fir	,,	2	10	0	3	10	0
Riga	,,	3	5	0	3	10	0
Swedish	,,	2	5	0	2	15	0
Masts, Quebec red pine	,,	4	0	0	6	10	0
,, yellow pine	,,	4	0	0	6	10	0
Oregon	,,	7	0	0	9	0	0
Lathwood, Dantzic, fm.	,,	3	0	0	5	0	0
,, St. Petersburg	,,	5	5	0	5	15	0
Deals, per C., 12ft. by 3 by 9in.,							
Quebec, white spruce	,,	12	10	0	18	0	0
St. John, white spruce	,,	12	10	0	14	10	0
Yellow pine, pr reduced C							
Canada, 1st quality	,,	18	0	0	19	10	0
,, 2nd do	,,	13	5	0	14	0	0
Archangel, yellow	,,	12	10	0	14	10	0
St. Petersburg, yellow	,,	13	0	0	13	10	0
Finland	,,	7	0	0	8	0	0
Memel and Dantzic	,,	0	0	0	0	0	0
Gothenburg, yellow	,,	8	10	0	10	10	0
,, white	,,	8	10	0	9	10	0
Gefle, yellow	,,	10	10	0	12	10	0
Soderbam	,,	8	10	0	12	0	0
Christiania, per C., 12ft. by 3 by 9in., yellow	,,	10	0	0	12	10	0
Other Norway	,,	7	0	0	8	0	0
Flooring boards, pr square of 1in., first yellow	,,	0	9	0	0	10	0
First white	,,	0	8	0	0	9	0
Second qualities	,,	0	6	0	0	8	0
OILS, &c.							
Seal, pale	per tun	37	0	0	0	0	0
Sperm body	,,	82	0	0	0	0	0
Cod	,,	35	10	0	0	0	0
Whale, South Sea, pale	,,	34	0	0	0	0	0
Olive, Gallipoli	,,	48	0	0	0	0	0
Cocoanut, Cochin, tun	,,	50	0	0	0	0	0
Palm, fine	,,	36	10	0	37	0	0
Linseed	,,	32	5	0	0	0	0
Rapeseed, Eng pale	,,	45	10	0	0	0	0
Cottonseed	,,	27	0	0	31	10	0

BANKRUPTS.

TO SURRENDER IN THE COUNTRY.

Athorn, Thomas Walter, Chorlton-upon-Medlock, plumber, June 12, at Manchester.—Jump, James, Waterloo, builder, June 19, at Liverpool.—John Bewley, Cambridge, iron founder, June 8, at 12.

BANKRUPTCY ANNULLED.

Wilkinson, John and James, Sheffield, builders, May 3.

DIVIDEND MEETINGS.

June 15, H. Orford, Greenwich, timber merchant.—June 15, H. V. Martin, Leeds, cotton spinner and brickmaker.—June 13, T. Williams, Wrexham, brick and tile manufacturer.

PAYMENT OF DIVIDEND.

William E. Wilson, Plymouth, builder, 1s.

PARTNERSHIPS DISSOLVED.

J. Lassey and W. Dennet, Warley, Yorkshire, stone merchants.—J. Hague and W. Thompson, Sheffield, brass founders.—J. Thompson and J. Freakley, Wortley, Yorkshire, brick manufacturers.—C. Barlow and W. F. Clare, Southampton-buildings, consulting engineers.—W. Smith and S. Cockcroft, Allerton, Yorkshire, stone merchants.—Cooper and Stowell, Clarence Wharf and Swan-lane, Rotherhithe, and King's-cross, stone merchants.—Neave and Fry, London, Portsmouth, and Bristol, contractors.—Charlton and Cownley, Lombard-court, City, surveyors.—Hodgson and Davidson, Ramsgate, iron merchants and auctioneers.

SCOTCH SEQUESTRATION.

James Schoolar, Lockerbie, mason, June 7, at 12.

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To Architects.

THE Committee of the intended NEW MASONIC HALL, LIVERPOOL, invite COMPETITION PLANS and Elevations for a New Masonic Hall. A Premium of £100 will be awarded for the best, and £50 for the second-best Design. Both plans to become the property of the Committee; but should either of the successful competitors be employed in the erection of the building, the Premium to merge in his commission, which shall not exceed £5 per cent. on the proposed outlay. The competition will be limited to those architects, who are subscribing members of a Masonic Lodge in England. All Plans to be deposited not later than the 1st September next, sealed and addressed to the Honorary Secretary of the Committee, Masonic Hall, 22, Hope-street, Liverpool, being marked with a Motto or Device, and accompanied by a sealed envelope similarly marked, containing the name, address, and number of Lodge of its author, but which will not be opened until after the Prizes are awarded.

Printed particulars, and a plan of the site, will be furnished to intending competitors by depositing 10s. (which will be returned to all parties sending in designs, except the successful competitors) on application to

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Honorary Secretary to the Committee,
34, South Castle-street, Liverpool.

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HANWELL.—Fronting the high-road and near the Station.
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The Governors do not pledge themselves to accept the highest or any tender. Tenders on the printed form to be delivered at the Hospital, in New Bridge-street, Blackfriars, before 12 o'clock on Saturday, 1st July, 1871.

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THE BUILDING NEWS.

LONDON, FRIDAY, JUNE 9, 1871.

MANCHESTER.

WE have never happened to meet with a description which would give, to a person who had not seen it, any but the vaguest idea of what Manchester really is. It is so well known to a large part of the world, that the ignorant minority perhaps seem scarcely worth the trouble of writing for; it is one of the places which everyone is assumed to be familiar with, and consequently. one of those whose characteristics there is the least chance of learning from books and newspapers. To some of our readers, therefore, a few notes on it may supply information; while to others, even if they reside in its neighbourhood, it may not be uninteresting to notice how it impresses a visitor from the south. It certainly cannot be called a fine town, but it is becoming a town with some fine buildings. It contains few handsome streets, and yet its street architecture is above, rather than below the average. It is a place of factories and warehouses, not of squares and shops: a place to work in, not to live in. One of the points which surprise a stranger is the smallness of it. If it be the second city in the kingdom, it is, for size, a very bad second. It does not at all approach in this particular to another London. Starting from a central point, like the Exchange or the New Town Hall, a walk of little more than a mile in any direction brings one unmistakeably to the outskirts. True, there are other towns beyond, there are manufacturing suburbs to fill the air with smoke, and to suggest that the importance of Manchester does not arise from its own magnitude. If we compare London to a world, round, distinct, and self-contained, Manchester may rather be likened to the nucleus of a comet. Small in itself, its importance is owing to its train; it draws after it a nebulous mass of manufacturing district which covers half a county.

The central part of Manchester is dense, and closely packed. The streets are generally narrow and near together; there is no great space between the backs of the houses. Land here is very costly, but its expense does not seem to have the effect of making buildings specially lofty. Ground is leased for long terms; 999 years is a common period. Construction is therefore pretty substantial, and houses are not run up, as in London, to last for 70 or 80 years only. Both stone and labour, moreover, are cheaper than in the south; the Yorkshire quarries are within easy reach, and hard, if not very even-coloured bricks are made close to the city. Their hardness, however, is not always a guarantee of durability; and the soft, sandy bricks of Suffolk perhaps stand the weather as well as the clayey ones of Lancashire. At least, plenty of cases are noticeable where the latter fail, rather by peeling away in flakes than by a gradual crumbling, and this mode of decay may be seen in other districts where the brick earth is stiff, and likely, it might at first be supposed, to produce an exceedingly permanent material. One great merit, of a negative kind, Manchester buildings undoubtedly possess: there is very little stucco used in them. Their materials are plainly shown, and not plastered over; good or bad, it is genuine work which they exhibit. Whatever excellence they have does at least belong to them; they are not mere pieces of scenery like a Brighton terrace, whose beauty is indeed but skin-deep, and whose art is like that of a modern belle, with false hair, false teeth, and false complexion. So far, there is a genuine interest about Manchester architecture. In the matter of design, too, it rarely falls below a certain point. There is but little of it that can be called strikingly bad, and the average of it is superior to that of Cannon-street or Southwark-street. Still (leaving for the moment the public buildings) there is little amongst it that leaves a permanent impression. The result of the whole is monotonous, and the mind longs for something fresh, unexpected, original. There is too much uniformity in these streets of factories and warehouses; they are all too much alike in general effect, however they may differ in details. There is too much slavery, in short, to Classic customs, too much respect paid to regularity when regularity is needless, too much hesitation to follow facts and accept their results. As may be concluded from this, the horizontal principle is supreme. Gables and dormers, if they exist, are concealed; chimneys, at least house chimneys, are kept pretty much out of sight; roofs are treated as if architecture ignored them, and the sham-cornice and blocking-course are affixed, as if by Act of Parliament, to the top of almost every façade in every style. On such principles, variety can hardly be anticipated. In a narrow street, there can be little room for projections and recesses. The front wall must be nearly flat, and the architect can do little to diversify its surface. So much is decided for him by circumstances from which he cannot escape. But when he goes on still further to impose rigid and quite unnecessary conditions on himself; when he settles irrevocably that his flat strip of wall shall be bounded by a flat cornice at the top with a flat blocking-course above it; when he ordains that his roof, his lanterns, his cross walls, his chimneys, shall, as far as possible, hide themselves lest they mar the beauty of this oblong strip of front; and when he prescribes that even the windows in this front shall all be of nearly the same size and at the same distance apart, it does look as if the architect, in his desire to simplify matters, were cutting away the very ground he stands on, and making his profession a needless one altogether. The remark, of course, applies to other cities besides the one which has just suggested it, and perhaps to some of them with more force than even to this one.

The lover of architecture, however, when he first visits Manchester, will naturally give his chief attention to the public buildings. And of the recent ones he may probably be most anxious to see that which has been most talked of—the new Assize Courts. If he is familiar with Mr. Waterhouse's later work, he may naturally, though perhaps not quite reasonably, be disappointed. He will see a building of no very great size and of no very striking effect: one which, if he had met with it in London, he might have passed with little notice, and might have attributed to any of a hundred architects who could easily be named. And on a nearer view he will not find much to alter his first impression. For an early production, the design may be called a promising one. But it is not more promising than scores of other works which have done nothing for their authors. It ranks nowhere, as to artistic power, beside many buildings which, like Mr. Pritchard's, at Eatington Park, have not received a fiftieth part of the praise and attention. Why is it, the stranger naturally asks, that a design of such average quality attracted such unusual notice? Possibly because architecture of any merit was rare in Manchester—possibly because the preceding competition had caused a large amount of talking and writing on the subject—possibly because Mr. Waterhouse had friends who knew him to be capable of much better things, and whose confidence time has since justified. In any case, there seems to have been a considerable amount of good fortune in obtaining such a reception for such a work. One is inclined to wonder how much success itself may be able to do in developing a man's latent powers; to ask whether some other architects, who have more than equalled the Assize Courts, might not have ultimately gone far beyond them had they met with anything besides neglect and disappointment. Is it always the "survival of the fittest" that happens?—or is there also a "survival of the most fortunate?" Is it not true that artistic talent may be brought out by cultivation, and do not opportunities for cultivation depend very much on success? When the queen-bee in a hive dies the community, it is said, proceed at once to develope another. They take an ordinary grub, which in the natural course would have become a common working bee. They put it into a cell by itself, and feed it on rich and stimulating food, and in a few days or weeks it emerges a full-grown queen. It is with no disrespect to eminent artists, in whatever sphere, that we have at times thought of some of them as having been produced on some analogous system. If the highest order of them are born great, there is another order who are made great—or at least distinguished, by the assistance, to a large extent, of favourable circumstances. We do not, indeed, affirm this of the architect whose marked advance has suggested the reflection: and in any case the mind which becomes eminent through cultivation must have had the seeds of eminence in it to begin with. Our hypothesis, if it be a true one, does not detract from the merit of those who have distinguished themselves: it only suggests that others who now are never heard of might, in similar circumstances, have done the same.

The general design of the Assize Courts must be familiar to most of our readers. The details do but little to improve it. There is a range of three-light windows on the ground floor, with small and closely-packed tracery. On the floor above them is a range of wide single lights, with no tracery, but with trefoiled heads and thick and heavy cusps. Considered separately, the style of the upper windows is, we think, more to be commended than that of the lower ones; but in contrast with them, they appear heavy, rude, and coarse. The carving in general is of that lifeless, naturalistic sort which looks as if the carver never saw a leaf that had not been gathered a week: it is far inferior to that of Mr. Waterhouse's later work in Lombard-street, and very far behind the beautiful foliage of a conventional type which he is now having executed at the Manchester Town-hall. The whole design shows abundant readiness to accept ideas, no matter from whence, but little of that power, which comes by practice, of assimilating them and bringing them into harmony. There are English Decorated windows, French Gothic crockets, Venetian Gothic arches, and Late German tracery panels, all mixed up with ornament whose only character is the no-character of the nineteenth century. As may be supposed, these discordant forms sorely injure one another, and the result is rather a museum of architecture than a perfected architectural work. It is obviously the production of an artist in what may be termed the "receptive" stage: when he was busy accumulating materials, and had scarcely yet begun to modify and assort them. We make this remark with the less reserve because it applies but little to more recent designs by the same author. The influence of different styles is, indeed, plainly traceable in what Mr. Waterhouse has lately done at Cambridge and elsewhere; but there is now but little of that mingling of crude and jarring forms which appears in his early work at Manchester. Many a building may be seen in every modern town, of whose author one is tempted to say—

> "This fellow picks up scraps, as pigeons peas,
> And issues them again when Heaven doth please;"

and many of our architects seem to pass all their lives in that preparatory stage which ought to be only a period of education for their real business. For them such an example as the Assize Courts furnishes little excuse; its union of crude ideas is far from satisfactory, and equally far from having been persevered in by its accomplished designer. The interior of the building is, in many respects, better than the outside, and the planning is found, in practice, to be convenient. One class of detail, moreover, deserves commendation throughout. The ironwork is excellent in design—and some of the joiners' work is little inferior to it.

The new Town Hall is too much hidden as yet by scaffolding to allow its future appearance to be judged of. The police-court—designed, if we remember rightly, by Messrs. Travers & Mangles—is being finished under the superintendence of Mr. Worthington. It is an effective Gothic work, executed in stone and red brick, with a large overhanging tower at the external angle, and a smaller tower, of minaret type, rising out of the general mass. There are some well-carved grotesques, placed—where it is to be feared they will soon be injured—adjoining the steps which lead up to the principal entrances. Messrs. Paley & Austin, of Lancaster, are building a church in the Waterloo-road. It is in a good and Early Pointed style—fairly carried out, with well-studied mouldings and but little carving. The tower would be much improved by some additional height: its principal story does not rise as far above the nave roof as would be wished. On the whole, however, the design is a creditable one—assuming, what is, of course, taken for granted in the bulk of modern churches, that we must adopt an inconvenient form of plan, because that form happened to suit the purposes of our ancestors a few hundred years ago.

THE PATENT LAWS.

Every year Parliament is invited, from different quarters, to relieve the country from the existing Patent Laws, and this session is no exception to the rule. There are three parties, broadly speaking, to the debate—those who would continue, those who would amend, and those who would abolish them. It is to the last idea, the advocate of which occupies his old ground with imperturbable tenacity, that we would chiefly advert, since the question is set down for early discussion, both as one of expediency and as one of justice. With respect to the first point, it is impossible to deny the existence of abuse and oppression; with regard to the second, it is a self-evident necessity; while, as for the third, it is the merest crotchet, but a crotchet which would work disastrously for every industrial interest in the country. Notwithstanding recent reforms, the costs are still monstrous; letters patent are granted without due investigation; the expense of maintaining a right infringed is beyond the power of all except the wealthy, and the issues are most uncertain; and, as a consequence, an immense proportion of preliminary registrations become void because the inventor cannot pay a tax which is without a parallel. But we have promised to deal, principally, with those who insist upon sweeping away patents altogether, yet who, with inexplicable inconsistency, stand by the principle of copyright in art and literature. A book, a picture, or a statue, they argue, is designed to please the eye, or the ear, or the mind, sensuously and intellectually. It is not a thing to be employed and worked with, nor consumable, nor a mode, a process, an operation, or an implement. It is no interference with manufactures, mechanics, mining, farming, or shipping. It is a completed production; whereas the action of a patent is frequently imperimentary; the privileges it confers lead to litigation; their infringement cannot be accurately measured, and their value is necessarily ephemeral. This, we venture to say, is, in brief, a fair description of the position taken up by those who would repeal, altogether, these protecting laws, substituting nothing whatever in their place. The author or the artist has a property concerning which there can be no mistake; but a mechanical patent may be as complex as the machine it refers to, and its invention should be as free as the wind to all the world—which means, if anything, that you shall not reprint a volume, or copy a photograph without licence, but that if your neighbour improves, after long thought, the printing and photographic processes, you may profit by his discoveries, from the moment they are announced, without offering him a tittle of reward. The doctrine appears monstrous, yet it has many supporters, both in and out of the Legislature. Now, what is the difference between "ideas" in a new book and "ideas" in a new apparatus, supposing both to be equally original? Have not both been the results of study, both worked out by the brain, both developed at the cost of much time and anxiety? Is not an author, especially a poet or romancist, an inventor; and is not an inventor, in precisely the same degree, an author? The genius of the individuals has only assumed different forms, and is not the labourer worthy of his hire in either case? It is the labour of the lapidary which gives value to a pebble. This brings on, no doubt, the question of natural rights. With reference to inventors, it is urged that they have only two, which may be enjoyed without letters patent—those of using and those of concealing their own inventions—limitations implying this, that years of toil are to be rewarded within the narrowest personal limits, since a man, to keep his secret, must not trust it to many; and that whenever a traitor divulges, or a spy—of the magpie race—succeeds in detecting it, its value is gone. For how could it be hoped that, in an extensive factory, a mystery should long be kept up with regard to the processes going forward? Besides, it does not follow that because a man contrives in part, or in the whole, a new cotton-machine he should possess either the capital or the peculiar talent necessary to conduct a cotton-mill. A first-rate mechanician might be a totally unqualified manufacturer, therefore the work of his mind would be still-born; he could not sell it, for none would buy a monopoly not worth a day's purchase. As to the natural rights spoken of, they are figments. We, all of us, claim a good many rights not represented by material possessions; as of ancient lights, free footways, immunity from trespass, protection against nuisances, and so forth. When these economists come next before Parliament, as they are threatening to do in a few days, let them follow Lord Mansfield's advice, and state their proposals without giving their reasons. Even the French Revolutions of the last century never went so far.

No one asks for perpetual patents, and many condemn the policy of renewing them after the term of the original grant has expired. But, upon the whole, it must be conceded, though it is often denied, that inventors have been a hardly-used class of men. The answer is that they have been so privileged as to become an industrial aristocracy. Now, it cannot be denied that there are plenty of dreamers, who fancy they have made great discoveries, who admire new mechanisms and methods until they imagine them their own, who are for ever sitting at the gates of Government with extraordinary schemes, requiring exorbitant sums for their fulfilment, and who, when repulsed, ascend upon the house-tops and proclaim themselves martyrs, because they are not paid for doing that which in the nature of things cannot be done. This has nothing to do with the principle of a Patent Law. There are others who devote themselves to fantastic trifles, and complain bitterly when the public do not appreciate them. Such are the curiously ingenious people whose novelties we find on one of the older Patent rolls; anti-emergent rat-traps, apparatus for securing corks in bottles, anti-splashing boots, improved epithems, collapsible tubes for sauces, and hotel enunciators. Observe, however, how not a few of the contrivances then ridiculed have grown into realities. The new fastening for shutters is in general use; the sewing-machine is the "improvement in stitching," then vaguely suggested; the preservation of fruit, vegetables, and meat is now an important branch of commerce; and the "enunciator," so laughed about at first, has been fitted to a hundred hotels. Even where it is not so, the principle of a Patent Law would not be touched. The principle is to reward a man for designing something manifestly useful to his fellows, and to encourage others to emulate him. It is very easy to say that this is pampering his selfishness. Why, upon that plea, all industry, intellectual or manual, is selfish, but the public is selfish also. When a discovery is made, it desires to have it described by the person who can describe it best, and surely the advantage should be reciprocal. Supposing, however, having no property in his idea, but manufacturing, say a new engine on his own works, he sold them under guarantees from his customers that they should be employed behind a vail. Would the guarantees stand for a day, and would not a system of espionage hateful to Englishmen be established?

The objection that the hope of obtaining a patent takes a man away from his regular business, frets him, and causes him disappointment, is hardly worth considering. That is the man's own affair exclusively. Nor do we lay much stress upon the proposal to substitute State grants for patents. The principle had a long trial, and utterly failed. For sixty years Parliament voted money to inventors in large sums, which were often wasted. The virtue of an exclusive right conceded to an inventor consists in the fact that its commercial depends upon its practical value. Who would dream, in our days, of giving an importunate old woman £5,000 of the public money—worth nearly £10,000 now—for a set of quack medicines, made up of calcined snails, burdock seeds, soap, and swine's cresses? Yet this was actually done in 1740. The cases of Jenner, Cartwright, and Crompton were exceptional; the first never contemplated turning his discovery to pecuniary account; the latter two were not, in point of fact, rewarded; they were merely reimbursed in about a third of the fortune they had sunk in their great inventions. The late Mr. Muntz paid £8,400 for inventing a yellow metal ship sheathing. But, advancing to another point, it is said that a patent is a monopoly, and therefore contrary to the policy of the law. The term monopoly, however, while convenient on occasion, is substantially inapplicable. The playing-cards and salt monopolies of former days, commanding the markets and arbitrarily raising prices, had nothing in the nature of patents, which are plainly competitions with adopted systems and established manufactures. When Watt thought of the steam-engine, there was another steam-engine in the field, upon which he felt convinced he could improve. There was a hard struggle to go through, before he could even be heard. There was another before he could obtain a trial. All the old inventors and their patrons rose against him. But he persevered, at incredible sacrifices, and succeeded. Even then he had to create the demand which was to recompense him. Are we to be told that, while his inventions enriched entire districts, he alone should have been no gainer; but should have been left in poverty to see his work fructifying in other hands? And here another point arises. Whatever be the profits of the patentee, the public is no loser; it pays no tax; even rival inventors are benefited. For an invention does not spring into perfectness all at once; and every detail of improvement may become the subject of a super-added though not hostile patent. It was Patent Law that gave us steam machinery for manufactures, locomotion, and agriculture, and compressed a century of progress into a decade. Referring to the objection that two individuals may be evolving the same idea, while the quickest to act may secure the entire advantage, we think it disposed of by the story about Columbus and the egg. When a man says "I could have done that, five minutes later," the hard-hearted answer must be, "Your rival did it five minutes sooner, has won the race, and by all codes of justice is entitled to the prize." The object of the inventor is to get his patent so soon as possible. Without it, what would he do? Probably bury his secret. Or, he might offer it to a capitalist who, naturally, would not buy a mystery without its explanation, thus commanding it, if so he were disposed, without paying a penny for the knowledge.

The equity of the Patent principle is acknowledged by every country in the civilised world, Switzerland excepted, and Switzerland is destitute of inventors. It has been, is, and seems likely for ever to be, a region of wooden cottages, milking-pails, spoons, and churns. All other nations have adopted the principle; but Great Britain imposes the heaviest tax, resembling, in this respect, Spain. We, up to a recent date, charged the inventor £175 in direct payment, for the recognition of a simple right, not to speak of collateral charges; and the explanation is that there must be so many stamps, filings, references, advertisements, and so forth, for the fattening of lazy departments. Why, when the Patent Law Bills set down for this session come on for debate the English inventor should remember that, were he a Prussian, he could secure his letters patent in full for fifteen years by a payment of £175?—£125?—£80?—£79?—even £12?—no; but of 1s. 6d. And this is what we desire to see established as the English scale. Each Government attaches different conditions, more or less onerous, to its grants; but, as we are keeping a single point in view, at present they need not be discussed. Why should letters patent be costly? It almost seems as though a prohibitive or protective duty were laid upon new discoveries. Without impugning the intellect of the rich, it may fairly be said that the majority of inventors are comparatively poor. Perhaps the very pursuit of novelty keeps them so. They may reside in remote parts of the country, and must visit London to justify their specifications; when there, they may have to encounter a fierce and costly litigation, as did Heath, the steel manufacturer, who got £10,000 for his patent after spending £15,000—not his own money—in defending it. Upon his paraffin inventions Young laid out £40,000 in law costs. This is partly because questions which juries are totally unfit to decide are referred to our venerable palladium. There was a very plain-spoken jury, not long ago, which, after trying for several days a question of infringement concerning a delicate process of electricity, declared itself bewildered, refused to sit any longer, and broke up in defiance of penalties. There is thus a fine levied upon the inventor's genius, contrary to the maxim that he who sows should reap. As if the harvests of the year should be sown by farmers and reaped by gleaners! It is a fallacy to say that an idea costs nothing, though it may effect, may produce millions. No invention can be put to any practical use without a serious amount of expenditure. Money must be sacrificed, not less than time, models made, experiments conducted, and publicity obtained. All these elements of the question should be taken into account, frequently as they are forgotten. But the primary principle of a patent law is that it defends a man's property. The public, however, are not less interested than the patentee. Rapid as have been the improvements in arts, sciences, manufactures, and general industry within the last thirty years, what would they have been without inventions, and where would have been the inventors without a hope to lure them on? We do not even hear of races run by "gentlemen riders" without a prize at the end of them. From the grand rush over the Derby turf to the village fair at which a rustic climbs a pole to claim a leg of pork, reward is expected. Well, patents are simply protections against dishonest appropriation, and all the world is interested in them. We cross the seas in vessels with patent screws, turned by patent engines; we traverse the land whirled along by patent locomotives, and made safe by patent signals and breaks; we whisper to the far East and West of the globe through patent telegraphs; we ride in patent vehicles; clothe ourselves from patent looms; warm ourselves by patent stoves; light our rooms with patent lamps; and shall we begrudge justice to the patentee? On the contrary, if he has really invented nothing he will do good neither to us nor to himself; if he has worked for years, and reached an useful result at last, let him gather the fruit which his hands have planted, without being mulcted for his sacrifices and services. An age which has abolished the taxes on knowledge ought surely to abolish the taxes on invention.

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XYLATECHNIGRAPHY.

We lately called attention in our review upon the furniture in the International Exhibition to some specimens by Messrs. Trollope, decorated by their new patented process for the decoration of natural wood by staining; and we have since seen a larger collection of both joiners' and cabinet-makers' work thus treated in their ware-rooms in Halkin-street West, Belgrave-square. As a process of artistic decoration this invention is a highly valuable one, but a "new art," as they call it, it certainly is not. Although woods have been stained previously, and that in more than one colour, by means of stencilling, nothing, as far as we are aware, has hitherto been attempted of the delicate and elaborate character of which this process is capable. By its means every shade, from white to black, buffs, browns, reds, and neutral green are produced, and pencilled on by hand with the finest lines if needed, or laid on broadly and with clearly defined edges. Through all their varied tints the natural grain and transparent lustre of the wood is retained, and the effect is soft, rich, and harmonious. Indeed, one considerable advantage in the process, according to our opinion, is that it does not seem to lend itself to strong or violent colouring, and that blues and pure greens, which are such dangerous implements in the hands of modern designers, do not make their appearance among the colours employed.

Among the articles to be seen at Halkin-street are several doors with highly enriched panels and architraves, the designs of which are good, and the effect striking and pleasing. Another fine example shows the complete treatment of a side and ceiling of a room with dado, cornice, &c. In this are some groups of fruit and leaves, which admirably exhibit the capabilities of the process. In a group of leaves, each leaf may have a slightly varied hue, and thus great variety is obtained. Some specimens of furniture, as sideboards and cabinets, deserve attention as illustrations of the richest and most elaborate character of work. In many of these gold is judiciously used in the mouldings to heighten the effect. Articles of bedroom furniture are decorated in a simpler manner, but, perhaps, are not so successful, some of them being rather heavy and dark.

On the whole we were very favourably impressed with this new process, and believe that architects will be grateful for the opportunities it will afford them, as they may have their own designs carried out in exact accordance with their drawings to the minutest details. The work, when done, is French polished or varnished, and the highly glazed surface thus obtained is perhaps the greatest present drawback, but we doubt not that this may be avoided, in which case we think that but little will be left to be desired by either artist or architect. It is obvious that any style or character of work may be adopted. Most of Messrs. Trollope's specimens are of the ordinary Renaissance style, but Greek, Pompeian, or Gothic ornament may be equally well carried out in this manner, and internal polychromy brought into use at a moderate cost, and with great permanence and durability.

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ARCHITECTURAL ASSOCIATION.

The usual fortnightly meeting of this Association was held on Friday evening last, the President, Mr. T. H. Watson, in the chair. Votes of thanks having been passed to Mr. Harston, Mr. Brooks, and the Rev. Mr. Godsell, for allowing a number of members to visit the new Stepney Sick Asylum and the Church of S. Andrew, at Plaistow, it was announced that the annual business meeting for the election of officers, &c., would be held on Friday next, the 16th inst. After one or two other announcements concerning the business of the Association,

Mr. Rowland Plumbe, F.R.I.B.A., Vice-President of the Association, read the following paper:—

ON THE ARCHITECTURAL TREATMENT OF PORTLAND CEMENT.

I am well aware that I am about to tread on very delicate ground, and that in presuming even to suppose that Portland cement is a material that it is possible to treat architecturally, I fear I shall be out of sympathy with the great majority of the members of the Association. The best architects, as a rule, entirely ignore this material, and many would regard it as a sign that a man who uses it habitually (and especially as ordinarily treated) is necessarily a man who does bad work. I confess I myself share that feeling to a very considerable extent. The prejudice that exists against the use of Portland and other cements as an external covering is, I believe, one that has arisen more from the abuse of the material than from its fair use. Unfortunately, it seems to have been one especially patronised by that large and energetic body of men who have covered the whole of the suburbs of London with dwellings alike bad in construction, in internal arrangement, and in external appearance. I need hardly state that I refer to the class known as "speculating builders." I regard as one of the greatest misfortunes that could happen to any community the being obliged to depend upon the production of such people for the dwellings and homes in which, as a rule, the most enjoyable part of existence has passed. However, so much has been said and written on the miseries and discomforts of "speculative-built" houses, that I need not occupy your time by enlarging on this matter, except as regards its direct bearing on the subject of this paper. In my opinion Portland cement has been unfortunate from the date of its first use, and even in its name (so-called from its supposed resemblance to Portland stone), it indicated a departure from the first principles that should have guided its proper use, for the very thing that was wanted in its proper employment was that it should not look like Portland or any other stone, and that it should stand and be treated as a material of itself. My sympathy with the use of this material arises to a great extent from a consciousness of the ill-use to which it has been subjected by Mr. Stucco and his friends and relations the speculative builders, who, having once decided on its being a material well suited to embellish their productions, seem to have had no difficulty in persuading the surveyors of the estates on which they were building that it was a material that could make the designs of their house fronts look like the most beautiful stone-built houses; so they thereupon set to work, and in the most lavish and extravagant manner they built and constructed—and even to the present day build and construct—their semi-detached villas (letting at the enormous rents of from £30 to £50 a year), with cornices copied direct (with slightly exaggerated proportions) from the Italian palaces and even Classic temples, as set forth in the various architectural drawing-books to which they have access, or as handed down from generation to generation in the shape of old moulds and other stock-in-trade. Obviously, to people of such proclivities, the temptation to put to their house a cornice suitable for a palace must be very great, when we consider that the difference in expense between it and an appropriate one consisted principally in the cost of preparing the zinc mould used to run it. Why shouldn't they have a grand palatial cornice, they say, when it doesn't cost more than any other? In like manner they have proceeded to decorate their windows with most elaborate dressings, and their doorways with massive columns, each looking as though worked out of one stone, and with richly-carved caps and entablatures. Indeed, some go even so far as to cover the whole surface of their houses with cement, jointed in the most perfect and regular manner also, to look as though the houses were built of solid stone, until the unsuspecting British householder becomes so amazed at the great architectural advantages thrust upon him that he cannot do otherwise than purchase the "eligible semi-detached villa residence, with pleasing elevation," so often and so successfully offered at a price so infinitely below its apparent value, it having to be pretty plainly intimated that the architecture has been thrown into the bargain for nothing, entirely out of the love and regard which the said Mr. Stucco and his friends have for really good work and fine art. But alas! the illusion passes away. In addition to the discomforts which bad construction, faulty arrangement, and worthless fittings produce, insult is heaped upon injury, and the British householder finds the pride of his heart, the palatial front, showing signs of decay. First, a suspicious swelling appears in numberless small places over the front; then the solid stone ashlaring begins to turn up at the edges; and after a time it peels off, as though suffering from some leprous disease, and leaves exposed underneath a hideous surface, seemingly compounded of dirt and cinders, until shortly the elaborate dressings and massive columns and entablatures also begin to show signs of decay, and each morning as the too-confiding possessor of the palatially-fronted residence takes his departure for town he is cheered by the sight of its mangled remains strewing the ground as he walks away. Still, with the courage of despair, he determines not to be beaten, and sends for Mr. Stucco. If he does succeed in obtaining an interview with that gentleman, as a rule the result is not satisfactory. Nothing remains to be done but to send for a really respectable builder. No doubt *he* will soon put all matters quite straight, and the house will be restored to its first beauty and grandeur. The workmen make a commencement, and for a time the proprietor hopes he has seen the worst of his bargain; but the workmen do not seem to be making satisfactory progress with the work; more and more of the solid stone ashlaring and elaborate and massive architectural features have to be removed; and, to make a long story short, it is found that cement work of the worst possible quality has been plastered over as a screen to conceal brickwork as bad and rotten as could possibly be built. Then the proprietor knows the worst, and probably tries to patch up his front as best he may; and in the event of his not being able to sell the house, makes up his mind to spend a considerable amount every year or two in repairing that which can never be made sound, as from its construction it must necessarily be subject to continual dilapidations.

Now, in the face of extensive experience of cement work of this description (and no doubt most of us have met with such cases continually), can it be surprising that we should have conceived a prejudice against the use of the material itself? But, surely, when architects themselves use Portland cement and other similar materials as an external covering, the before-mentioned disqualifications to its use do not exist? As a rule they do not. What, then, is the objection to its use? Here I must confess that we as architects have much to answer for in this way. In most cases where cement is used we deliberately sit down and design a front, frequently exercising much care and thought, and often showing great ingenuity and merit; but we design it in every way as though it was to be built of carved and worked stone, and then, as though suddenly awaking to the fact that even our most sanguine expectations of persuading our client to make the necessary outlay to carry it out will not be realised, we resolve to carry the whole out in Portland cement. Now, designing and working in this spirit can we expect to obtain good results? Are we treating the material fairly? In fact, are we doing better or truer work than Mr. Stucco before so often referred to? To all these questions I answer emphatically, No! And until we can divest our minds of the delusion that stone forms and treatment can be properly carried out in cement, we shall never design properly in the latter material. It may possibly be contended that an architect who designs a building well and carefully, and one which possesses originality and power, and that is in every way appropriate and suitable for stone construction, is entitled to as much credit for his design, even though it be carried out in cement, as would have been accorded to him had it been executed in stone; and it may further be argued that it is not the architect's fault that it is not executed in stone, but that his client is compelled to adopt the less expensive material. I venture to think, however, that this is an untrue and dangerous view to take, There cannot in this case be a mere beauty of architectural form and combination irrespective of the material with which we have to work and in which we have to design, and in such a case, if an architect cannot carry out his design in stone he must not hesitate to make a fresh design suitable to the less costly material with which he has to deal. Serious errors in this respect have, I think, been made by architects of great reputation (who have carried out large and important works in magnificent positions) through working in the untrue spirit to which I have above referred. With the greatest deference to the talent and ability of these gentlemen, I cannot help saying that in my opinion they have lost great opportunities, and that if, when designing in cement, they had studied to employ combinations suitable for the material instead of the stone forms used, they would have produced infinitely truer and finer buildings, and would at the same time have increased their own reputation and advanced the cause of architectural art. Let us most rigidly and unhesitatingly admit as a canon of architectural art that the designer must above all things, in the conception of his design, consider the material he is about to use, and then I venture to think that we shall soon have an architecture, even of Portland cement, as true and as appropriate as the architecture of any other material. It may fairly be said that the principles I have been advocating apply to the design of all materials, and are in no way peculiar to the treatment of Portland cement. Of course this is unquestionably correct, but I think I am not wrong in stating that of all materials, that which has received the least consideration as regards special design is undoubtedly Portland cement used externally. There can be no doubt that good cement work is in many instances a most valuable and durable material regarded in a constructive point of view—so much so that in most of our seaside towns, and in positions exposed to the driving, penetrating, rain that so often accompanies our south-west winds, it has got to be almost universally used, and has been found frequently to be the only material that will resist the penetration of damp, it having often been used successfully when all other known precautions (such as hollow walls, &c.) against the penetration of weather have failed.

The growing use of concrete construction renders it extremely probable that Portland cement will be more extensively used as an external covering, it having been found necessary, in most cases, to cover the concrete walls with cement. Being now engaged professionally in the carrying out of a rather extensive range of buildings in concrete, I find myself compelled to grapple with the difficulties of Portland cement design; and it is only in connection with frame-built concrete buildings that I personally should feel disposed to use cement architecturally. I should certainly infinitely prefer to design a brick building as such than to cover it with cement, unless very special circumstances rendered it desirable to do otherwise.

Having stated rather fully how cement should *not* be used, it is now necessary to indicate how properly to employ it. In doing this, I purpose endeavouring to point out some of the principles of design which seem to me peculiar to it. I do not consider it within the scope of this paper in any way to touch upon practical subjects, as the quality, strength, and proper working of cement. I presume you will all admit that the material is one thoroughly fit for the architectural treatment to which I allude, and that when of good quality and properly worked, it is durable and suitable for its purpose.

Firstly (and chiefly), I would submit that Portland cement should no more be treated as stone than it should as wood, or any other material of equally different nature. It should be treated exclusively and entirely as a plastic material, always remembering that it is a comparatively thin coat laid over and upon some other material forming the bulk of the walling, it being generally presumed that it is of superior hardness and durability, and more waterproof than the material it covers, and that to that extent it is intended as a protection and preservative of the same. This, it seems to me, would indicate that it should be treated with great breadth and in large surfaces. I should certainly be exceedingly careful how I broke up the surface, and should always endeavour to treat it as a covering laid on, and to preserve a flatness and absence of everything like high relief and deep sinking. Carrying out the idea of its being a plastic material, I should not object to run such mouldings as could be obtained in the thickness of the cement itself; but I think care should be taken to keep the mouldings as fine as would be done in designing any other plaster work, such, for instance, as would be employed for inside cornices and similar plaster features. Anything like elaborately moulded and blocked cornices, requiring stone cores and other artificial means of obtaining projection, should be avoided; but if it were necessary to project walls or to use a cornice, I would prefer to use such as could be run on any projection that could be obtained in the material of the walling itself. For instance, in the concrete building I am erecting, I bring over the walls as a shallow cove at top, and I purpose covering the same with coloured cement, adding one or two shallow mouldings, such as can be got in the thickness of the cement. Anything in the shape of architraves, pediments, or other dressings to window and door openings should be avoided; but good effects might be got by forming splays and running shallow mouldings round the reveals. Jointing or lining the surface, as usually seen in stucco work, should be avoided as an imitation of stone jointing, and as destroying breadth and flatness of surface; but incised lines and ornament of shallow depth may well be employed to obtain richness of effect and to cut up the surface without destroying the breadth. The true treatment of cement-work would probably lead to a very extensive use of these narrow sinkings, both in lines and ornament, and such a treatment would be legitimate, as they could readily be run and worked in the cement.

The texture of the face of the work is of importance. If finished off and floated with a wood-float the *sand* is brought very much to the surface, and a rough texture is given to the work, that being generally the surface now given to cement work as usually executed. The advantage of this rough surface is doubtful, especially in London. It soon discolours, and there is but little chance of its washing clean with the weather. An exceedingly fine—almost polished—surface can be given by finishing with a steel float or trowel; in this case the cement comes to the surface, but is apt to show the working of the trowel, and to leave a smeared surface far from sightly or agreeable in appearance. The surface that would probably meet with most approval is one which may be described as between these two, and is obtained by floating with a steel trowel, but by finishing the process by dabbing it on the work instead of floating: this gives an exceedingly hard surface without the excessive polish obtained by the last method, and is so much finer than the floated work that it would probably retain its colour much better.

Of course it is highly desirable to avoid painting cement work, but at the same time the atmosphere (and that of London particularly) will discolour it after it has had some years' wear. I have but little doubt, however, that it could be cleansed from time to time at no more expense than would be incurred by staining and tuck-pointing brickwork and by scraping stone work, as is usually done in cleansing these materials. Particular attention should, I think, be given to the local colour of the work. As a rule, Portland cement mixed with Thames sand does not give an agreeable colour, but it may be varied by mixing with different coloured sands, from white to deep red. The specimen on the table [shown] is made with a mixture of Thames and White Leighton sand—one of each and one of cement; and a mixture of cement and burnt ballast and sand gives an exceedingly good warm colour.

Cement work is particularly well adapted for coloured decoration, and with proper management and careful design in its use I believe exceedingly good results might be obtained. The cement should be coloured before working, as its effect is entirely different from any colouring put on after the work is set. So important do I consider this part of our subject that I should like to see every cement-designed building treated in colour. Here are some specimens of coloured cements on the table, all of which (with the exception, perhaps, of the yellow) might be used in external decoration. [Specimens shown.] All kinds of colours will not mix with cement; some kill it, others are themselves destroyed by admixture with it. As a rule, mineral colours will stand best. Of the specimens on the table, the dark red is made of one-tenth part of purple brown (oxide of iron), two parts of sand, and one of cement, all mixed dry before making up for use; the light red is made with Venetian red, in the same proportions; the blue is made of German ultramarine, mixed as before; the green is obtained by green ultramarine, and this, by daylight, is of an exceedingly nice tint—the colour, itself, however, is expensive, so much so as to render its use in large quantities somewhat improbable—the proportions are as before; the yellow is made of cadmium yellow and Thames sand—brighter colours might be obtained, but it is hardly a colour that could be used in decoration to any extent unless mixed with others. Good blacks might be made with black manganese mixed in the same proportions. All these colours could be varied by altering the proportions and by using different coloured sands. The admixture of colours with cements no doubt will give different results as regards setting and colour, varying with the cement and sand used; before employing the same direct experiment should therefore be made. This facility of mixing colour with cement is, I feel, a strong point in its favour, and should be fairly tried by all interested in or using cement architecturally.

In connection with coloured decoration in cement work, encaustic and other tiles might be used with great effect. The tile work that I have seen in connection with cement has not seemed to me to be satisfactory in appearance. Highly-glazed tiles are usually employed, and the effect, in conjunction with the dull floated surface of the cement, shows too great a contrast. If the cement surface were finished as before last described, and the tiles were not to be glazed, the effect, I feel sure, would be extremely good. The small self-coloured tiles might be used with excellent effect as bands and lines instead of incised work, or even as a mosaic in panels or friezes. I should, however, prefer to have them unglazed. The manufacture of ornamental tiles has reached so high a pitch of excellence, the variety of design and colour is so great, the texture and colour of the cements may be made so suitable, and the fixing is such a simple matter, that I think every inducement exists for the employment of the two materials together.

Cement work may be ornamentally treated by a kind of stencil process, which is almost as rapidly executed as ordinary paint stencilling, and it can be done by experienced workmen almost as cheaply. A stencil plate having been cut to the required pattern, and of the necessary thickness (according to the relief wanted), it is laid over the ground when the latter is sufficiently set to allow of its being worked, but as soon as possible after the general surface is laid on; coloured cement, or, of course, the same coloured cement as the ground, is then filled into the perforations of the plate, and floated off flush with its upper surface; the plate, on being removed, leaves the pattern as shown in the specimens on the table. If the ground is roughed for an extra "key" to the stencilling by picking through the pattern of the plate before filling in, great extra durability results, and, as the ground is hardly set, the stencilling sets and hardens with it, so that a most durable kind of ornamentation is obtained. This plan could be adopted to any extent, and pattern over pattern might be stencilled, and different colours might be used to the extent of many layers, as shown in the specimen on the table—[showing a green ultramarine ground coloured with various coloured cements filled into a second stencil plate.]

A perfectly legitimate method of enriching a cement surface would be to stamp thereon patterns in bands, or as a diaper in low relief as it is setting, and unquestionably the result would be satisfactory. Enriched surfaces of this kind, using different dies, and doing the work by hand, so as to give a slight variety of texture, could not fail to have an exceedingly good effect. Metal dies with polished faces would give the best results. Some time ago Mr. Ferrey, in a short paper read before the Institute, advocated this method of decorating the ordinary stucco work of churches and other buildings. I am not aware if he has employed it, nor can I say whether in stucco the effect he expected to obtain was gained. I have no doubt, however, that such a method could be employed in the treatment of a cement surface.

A much more elaborate and expensive method of ornamenting cement surfaces has been to my knowledge employed with a view of its being used as flooring. The pattern or patterns were cut out of the cement when set, and coloured and stamped patterns filled in, the general surface being ground to preserve its colour, but all attempts to bring it into use were abandoned, on account of the great cost involved in its manufacture.

I imagine that all the processes used in the ornamentation of old plaster work, and known as "pargetting," might with equally good effect be used in the treatment of cement fronts, and that wrought and stamped devices might be used in almost an exactly similar manner, and also that various patterns and ornaments might be worked in a different-coloured or different-textured material, much in the same manner as in the old work. Much information and many suggestions for the treatment of cement fronts may be obtained from a careful study of old plaster work. All fresco decoration and other artistic painting on cement surfaces is itself a distinct art, which it would hardly be within the scope of this paper to consider.

Cement surfaces may also be ornamented by hand with a trowel-point or with a pointed lath, the patterns being scratched on the surface much in the same way as is often to be found on old plaster work, and as revived by Messrs. Shaw, Nesfield, and others. A specimen of this work can be seen on one of the most charmingly-designed lodges I have ever met with: I refer to the lodge at the southern end of the Broad Walk in the Regent's Park. The best art work might be produced by hand in this way at but a comparatively small expense, and coloured cements might advantageously be used with them.

My paper will probably hardly be considered complete unless I take some notice of cement cast work. Of course I should entirely eschew the use of cast work in all forms properly belonging to stone treatment. The use of the wonderful capitals and ornamental brackets that are now so much employed would demoralise the effect of (in other respects) the best-designed cement building; but cast work might perhaps be permitted in such positions as might be suitable for encaustic tiles or series of geometrical patterns in bands and small panels. Personally, however, I should try to avoid its use, and depend upon some one or more of the processes before indicated for my effects. All hand-modelled work on the building itself could, of course, be used, although in so quickly-setting a material there is not much scope for any elaborate work of this kind.

In conclusion, I am anxious to impress upon this meeting that I do not advocate the use of Portland cement architecturally—I consider that we have other materials which we can use to much better advantage; but I do wish to point out strongly to the members of this Association the fact that we, as artists and architects, must, whenever we are compelled to use it, endeavour to our utmost to give it a suitable and distinctive treatment.

DISCUSSION.

Mr. Gilbert R. Redgrave, in proposing a vote of thanks to Mr. Plumbe for his paper, said he thought that Mr. Plumbe had done quite right in condemning the way in which Portland cement is generally treated—viz., as a coating for hiding bad work. In a brick city like London, however, many instances arose in which it was advisable to use dressings of some sort, and if they could not be obtained in stone, there was no other course open but to choose cement. The distinctive treatment of cement for dressings seemed to him naturally to branch off in the direction of stone. With regard to concrete walling, he agreed with Mr. Plumbe that it was absolutely necessary to render the surface with cement; but in his (Mr. Redgrave's) opinion, the simplest and most architecturesque plan of doing this would be to "rough-cast" it. This plan was also infinitely cheaper than any other stuccoing or plastering. The proposal of Mr. Plumbe's to use incised ornament seemed perfectly legitimate; its only drawback, perhaps, was that the dull gray-brown colour of the cement and the low relief of the proposed ornament would probably render it very ineffective, although Mr. Plumbe's proposals to use coloured cements in such ornament seemed to show a way out of this difficulty. The great difficulty in using stained cements was that the colours so often washed out, no matter how many times the cement had been turned over before using. This was especially the case with the iron colour (purple brown) used for red cement. This, when washed out, often caused long gory stains down the façades in which it was used. The proposals to use different coloured sands and burnt clay seemed to him (Mr. Redgrave) to be perfectly legitimate. By using light sands in admixture with Portland cement the sombre colour was in a great degree avoided. Mr. Plumbe had objected to the use of cast work in plaster except under very exceptional circumstances, but he (the speaker) considered that such work was perfectly legitimate, and the material, moreover, readily lent itself to such treatment. If it was legitimate to run mouldings in cement, it was surely allowable to have cast ornament in that material. At any rate, he considered cast work in cement more legitimate ornament than encaustic tiles set in cement. He thought that one great danger in the use of the coloured cements suggested in the paper was that it would be difficult to know where to stop.

A Member, in seconding the vote of thanks, said that it was obvious that in London the natural colour of the cement would not do. The cement would therefore have to be coloured, and a glance at any of the cement-built streets—such as Regent-street, Moorgate-street, or King William-street—would show the inconvenience and unsightliness resulting from different owners or occupiers painting their premises of various tints, without any reference to the harmony of the whole street or block of buildings. This often produced very ludicrous effects, as when, for example, a pilaster dividing the façades of two houses was painted half in one colour and half in a colour quite out of harmony with the first half. Of course, if it was possible for the architect to definitely and permanently fix the colours of the different portions of his façades by incorporating the colour with the cement itself before applying it to the building, this difficulty would be obviated.

Mr. Aldridge, in support of the motion, asked what was the durability of the colours proposed? Would they last any longer than the ordinary sombre tint of Portland cement? If not, then no end would be gained by incorporating colour with the cement. As to the use of tiles in conjunction with cement work, there might be some objections to them unless used with judgment, particularly if such tiles were glazed, but inasmuch as the surfaces were glazed they possessed the great advantage of being readily, quickly, and thoroughly cleansed. He thought it very doubtful whether the proposed coloured Portland cement fronts could be cleaned at all. It seemed to him, too, that such coloured cement could only be introduced in very small portions over the front of a building, and he did not think it was possible to have coloured façades in this material of anything like the extent of those in Oxford-street (Duclos', the confectioner's) and Berners-street (Novello's music publishing premises), obtained by the external application of colour. Of course, the mode advocated by Mr. Plumbe could be introduced into panelling and string-courses, but he (Mr. Aldridge) thought the resulting effect would be somewhat "spotty." He had always entertained the view that Portland cement was a great abomination, and one to be avoided on every possible occasion. In his opinion much of the architecture of London had been spoilt by coating over the old buildings with cement. He considered that if Portland cement must be used, the only thing that could be done with it was to paint it.

Another Member thought there could be no objection to the incorporation of colour with the cement itself, any more than objection could be taken to the use of colour in terra-cotta.

Mr. Payne asked whether Mr. Plumbe recommended for outside work the stencil-plaster work described in the paper, and whether, if the work so obtained in relief got chipped, a very spotty appearance would not ensue? He should also like to be informed of buildings where this treatment had been adopted.

Mr. Williams asked whether it was possible to give Portland cement a vitreous surface after it was *in situ.*

Mr. Clarkson remarked that one objection unfairly urged against the ordinary use of Portland cement was that, as it required painting periodically, people painted separate houses in one large block in different colours, and thus disturbed the harmony of the composition, especially when a pilaster dividing two façades was painted in two different tints. Many objectors to Portland cement as a "sham," however, winked at the sham which was perpetrated in designing the façades of a number of houses collectively in the form of the façade of a palace. Although it was true that Portland cement was used by the speculating builder, and put to very base uses, still it had been used in good work, as, for instance, the Pall Mall front of the Travellers' Club-house, and the front of the Cannon-street railway hotel. Many architects, and even members of the Association, were responsible for Portland cement on brickwork, the cement being used, to a certain extent, on the lines of stonework. He considered that much of the cement architecture of London was far preferable æsthetically to the "respectable" brick architecture of Gower-street and Harley-street. Our architecture was a sort of conventional architecture, seeking to attain the greatest effect with the least expenditure of means, and Portland cement offered an opportunity of doing this in a pleasanter and more lasting way than in brickwork, inasmuch as the subtle effects of our atmosphere soon deprived brickwork of its effectiveness. Mr. Barry's schools in S. Giles's were now fast losing their effect from this reason. Although Mr. Plumbe's suggestions for using coloured cements were very well worth attention, he (the speaker) thought that it was only in the country where work executed in such cement would look well, and that such work was hardly applicable to town architecture.

Mr. Mundey, in supporting the motion before the meeting, expressed it as his opinion that Portland cement could only be used legitimately on flat or nearly flat surfaces, and this was a fatal objection to its use on a large scale. He considered cast-work to be legitimate in cement design, but the projection should not require the aid of any inner construction or core, and there should be nothing approaching to under-cutting. The nature of the ornament should be such as could be obtained in a single impression.

Mr. **Quilter** considered that one of the greatest objections to the ordinary use of Portland cement was that it was used in such large masses, whole façades being coated with it. He conceived, however, that it might be advantageous, while using cement, to let the brick or other construction project through the cement at certain intervals. This would relieve the sombre tone of the work. All incised and cast-work should be in very low relief, and only such as could be obtained in the thickness of the coating of cement; there should be nothing in the shape of a core. As to "rough-casting," suggested by Mr. Redgrave, his (Mr. Quilter's) only objection to it was that it showed no evidence of having been done by any one but a mere labourer. In Portland cement it was possible to show that skilled labour had been employed. He thought that the great danger in using encaustic tiles would be found to lie in using them in too great contrast. Tiles should not be used in little spots, but in large panels.

The **President**, in putting the vote of thanks to the meeting, said he disliked Portland cement as much as Mr. Plumbe did. If coloured cements were used, he should give up all the reds and blues that went beyond a certain low tone. The green appeared to him to be one of the most pleasing of the colours, but as it was derived from green ultramarine, it was quite impossible that it could be used in large quantities, except at a very high cost. In using large quantities of cement, great care was necessary to get a sufficient quantity of clean and well-washed sand of the requisite tint; if this was not attended to, the work became patchy, unless broken by some very strongly-marked lines. A method had been adopted by Mr. Blomfield of using bands of red bricks or tiles at intervals, and thus this patchiness was avoided, and, at the same time, a warmth of tone was imparted to the cement work.

The motion having been carried by acclamation,

Mr. **Plumbe**, in reply, said that as to "rough-cast" work, suggested by Mr. Redgrave, he thought it an exceedingly nice method of coating concrete walls, but its roughness of surface was an insuperable objection to its use in London. In the country, however, it might be used freely, and, in conjunction with it, any amount of pargetting might be executed, so that Mr. Quilter's objection to it on the score of absence of artistic value would fall to the ground. He (Mr. Plumbe) thought that incised work was peculiarly adaptable to cement ornamentation. As to the "running" of the colouring materials, his impression was that this was owing to the improper texture which had been given to the surface of the cement. As explained in the paper, if the surface was finished with a steel float or trowel (instead of with a wooden float), and afterwards "dabbed" over in order to obviate a too-highly glazed surface, there would be no fear of the colours "running" if the cement was properly mixed. As to cast work, he had distinctly stated in the paper that all the methods pursued by the old plasterers might be imitated with advantage. He meant to have added that he thought all cast work in cement which was used for anything like a constructive feature (such as a large bracket supporting a cornice, or a carved cap) to be decidedly objectionable. As to the necessity, alleged by one of the speakers, for painting cement work, he (Mr. Plumbe) thought that with the surface and the colour he advocated, painting would be rendered unnecessary, as the work could easily be kept clean. The paper he had read was, to a certain extent, experimental, but he had faith enough in the principles he had advocated to give them a trial on the first opportunity. Unglazed tiles were, he thought, quite as readily cleaned as those that were glazed, and were, of course, more suitable for use with cement. Cement had been very wrongly used, but architects were in some measure to blame for this, for they had ignored the material while it was being largely used, instead of trying to give it some appropriate architectural treatment. Where stencil work in cement (as advocated by him) had been used he could not tell; it was partly his own idea and partly suggested by a practical man. He thought it would answer well for outside work. With reference to Mr. Williams's suggestion as to a vitreous surface, he thought it would be a very dangerous expedient to adopt, for any moisture getting behind the cement would, in frosty weather, expand, and the whole surface would be shivered to pieces. As to Mr. Clarkson's defence of the use of Portland cement, he (Mr. Plumbe) contended that if the architects of the works alluded to were obliged to use cement, they might have won more credit to themselves had they sought to give the material its own distinctive and appropriate treatment, instead of working in cement with stone lines and forms. He quite agreed with the President that a low tone of colour was advisable for tinted plaster work. In conclusion, he thanked the members for the vote of thanks they had accorded to him.

The meeting then terminated.

A MILLION BLUNDERS.*

Amidst the din of arms abroad and petty politics at home, have you a corner for a subject less exciting, but very important to Englishmen? Then let me expose that great blot upon the English intellect, the thing we call A HOUSE, especially as it is built in our streets, rows, and squares.

To begin at the bottom—the drains are hidden; nobody knows their course. A foul smell arises: it has to be groped for, and half the kitchen and scullery floors taken up—blunder I. The whole course of the drain ought to be marked with the graving tool, on the stones, and a map of the drains deposited with a parish officer; overlying boards and stones ought to be hinged, to facilitate examination. Things capable of derangement should never be inaccessible. This is common sense; yet, from their drains to their chimney-pots, the builders defy this maxim.

The kitchen windows are casements, and all casements are a mistake. They are small; they ought to be as large as possible. The want of light in kitchens is one of the causes why female servants—though their lot is a singularly happy one—are singularly irritable. But, not to dwell on small errors, the next great blunder in the kitchen is THE PLASTER CEILING.

The plaster ceiling may pass, with London builders, for a venerable antiquity that nothing can disturb, but to scholars it is an unhappy novelty and, in its present form, inexcusable. It was invented in a tawdry age as a vehicle of florid ornamentation; but what excuse can there be for a *plain* plaster ceiling? Count the objections to it in a kitchen. 1. A kitchen is a low room, and the ceiling makes it nine inches lower. 2. White is a glaring colour, and a white ceiling makes a room look lower. 3. This kitchen ceiling is dirty in a month's wear, and filthy in three months, with the smoke of gas, and it is a thing the servants cannot clean. 4. You cannot hang things on it.

Now change all this: lay out the prime cost of the ceiling, and a small part of its yearly cost, in finishing your joists and boards to receive varnish, and in varnishing them with three coats of good copal. Your low room is now nine inches higher and looks three feet. You can put in hooks and staples galore, and make the roof of this business-room useful; it is, in colour, a pale amber at starting, which is better for the human eye than white glare, and instead of getting uglier every day, as the plaster ceiling does, it improves every month, every year, every decade, every century. Clean deal, under varnish, acquires, in a few years, a beauty oak can never attain to. So much for the kitchen.

The kitchen stairs, whether of stone or wood, ought never to be laid down without a protecting nozzle. The brass nozzle costs some money, the lead nozzle hardly any: no nozzle can be dear; for it saves the steps, and they are dearer. See how the kitchen steps are cut to pieces for want of that little bit of forethought in the builder.

We are now on the first floor. Over our heads is a blunder, the plaster ceiling, well begrimed with the smoke from the gaselier, and not cleanable by the servants; and we stand upon another blunder; here are a set of boards, not joined together. They are nailed down loose, and being of green wood they gape: now the blunder immediately below, the plaster ceiling of the kitchen, has provided a receptacle of dust several inches deep. This rises when you walk upon the floor, rises in clouds when your children run; and that dust marks your carpet in black lines, and destroys it before its time. These same boards are laid down without varnish; by this means they rot and do not last one-half, nor, indeed, one quarter of their time. Moreover, the unvarnished boards get filthy at the sides before you furnish, and thus you lose the cleanest and most beautiful border possible to your carpet. So the householder is driven by the incapacity of the builder to pitiable substitutes—oil cloth, Indian matting, and stained wood, which last gets uglier every year, whereas deal boards varnished clean improve every year, every decade, every century.

When last seen I was standing on the first floor of the thing they call a house, with a blunder under my feet—unvarnished unjoined boards; and a blunder over my head—the oppressive glaring, plaster ceiling, full of its inevitable cracks, and foul with the smoke of only three months' gas. This room has square doors with lintels. Now all doors and doorways ought to be arched, for two reasons—first, the arch is incombustible; the lintel and breast-summer are combustible; secondly, the arch, and arched door, are beautiful; the square hole in the wall, and square door are hideous.

This room is lighted by casements. The casement may be defined "the unscientific window." Here in this single structure you may see most of the intellectual vices that mark the unscientific mind. The scientific way is always the simple way; so here you have complication on complication: one half of the window is to go up, the other half is to come down. The maker of it goes out of his way to struggle with Nature's laws; he grapples insanely with gravitation, and therefore he must use cords, and weights and pulleys, and build boxes to hide them in—he is a great hider. His wooden frames move up and down wooden grooves open to atmospheric influence. What is the consequence? The atmosphere becomes humid; the wooden frame sticks in the wooden box, and the unscientific window is jammed. What ho! Send for the CURSE OF FAMILIES, the British workman! Or one of the cords breaks (they are always breaking)—send for the CURSE OF FAMILIES to patch the blunder of the uncientific builder.

Now turn to the scientific window; it is simply a glass door with a wooden frame; it is not at the mercy of the atmosphere, it enters into no contest with gravitation; it is the one rational window upon earth. If a small window, it is a single glass door, if a large window, it is two glass doors, each calmly turning on three hinges, and not fighting against God Almighty and his laws when there is no need.

The scientific window can be cleaned by the householder's servants without difficulty or danger; not so the unscientific window.

How many a poor girl has owed broken bones to the casement mania! Now-a-days humane masters afflicted with unscientific windows send for the CURSE OF FAMILIES whenever their casements are dirty; but this costs seven or eight pounds a year, and the householder is crushed under taxes enough without having to pay this odd seven pounds per annum for the nescience of the builder.

We go up the stairs—between two blunders: the balusters are painted, whereas they ought to be made and varnished at the carpenter's shop, and then put up; varnished wood improves with time, painted deteriorates. On the other side is the domestic calamity, foul wear, invariable, yet never provided for; furniture ascending the stairs dents the wall and scratches it; sloppy housemaids paw it as they pass, and their dirty gowns, distended by crinoline, defile it.

What is to be done, then? Must the whole staircase be repainted every year, because five feet of it get dirty? Or shall brains step in and protect the vulnerable part?

The cure for this curse is chunam, or encaustic tiles, set five feet high all up the stairs. That costs money! Granted; but the life of a house is not the life of a butterfly. Even the tiles are a cheap cure, for repeated paintings of *the whole surface* mighty soon balance the prime cost of the tiles set over a small part.

The water-closet has no fire-place. That is a blunder. Every year we have a few days' hard frost and then, without a fire in the water-closet, the water in the pan freezes, the machinery is jammed, and the whole family endure a degree of discomfort, and even of degradation, because the builder builds in summer and forgets there is such a thing as winter.

The drawing-room presents no new feature; but the plaster ceiling is particularly objectionable in this room because it is under the bed-rooms, where water is used freely. Now if a man spills but a pint of water in washing or bathing, it runs through directly and defiles the drawing-room ceiling. Perhaps this blunder ought to be equally divided between the ceiling and the floor above, for whenever bedroom floors shall be properly constructed they will admit of buckets of water being sluiced all over them; and, indeed, will be so treated, and washed as courageously as are sculleries and kitchens only under the present benighted system.

I pass over the third floor and mount a wooden staircase, a terrible blunder in this part of the house, to the rooms under the roof. These rooms, if the roof was open-timbered, would give each inmate a great many cubic feet of air to breathe; so the perverse builder erects a plaster ceiling, and reduces him to a very few cubic feet of air. This, the maddest of all the ceilings, serves two characteristic purposes; it chokes and oppresses the poor devils that live under it, and it hides the roof; now the roof is the part that oftenest needs repairs, so it ought to be the most accessible part of the house, and the easiest to examine from the outside and from the inside. For this very reason Perversity in person hides it; whenever your roof or a gutter leaks, it is all groping and speculation, because your builder has concealed the inside of the roof with that wretched ceiling, and has made the outside accessible only to cats and sparrows, and the "curse of families." N.B.—Whenever that curse of families goes out on that roof to mend one hole, he makes two. Why not? Thanks to the perverse builder, you can't watch him, and *he has got a friend a plumber.*

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* From the *Pall Mall Gazette*.

We now rise from folly to lunacy; the roof is actually conical. This, in a modern house, is not merely silly, it is disgraceful to the human mind; it was all very well before gutters and pipes were invented: it was well designed to shoot off the water by the overlapping eaves; but now we run our water off by our gutters and pipes, and the roof merely feeds them; the conical roof feeds them too fast, and is a main cause of overflows. But there are many other objections to conical roofs, especially in streets and rows:

1st. The conical roof, by blocking up the air, necessitates high stacks of chimneys, which are expensive and dangerous.

2nd. The conical roof presses laterally against the walls, which these precious builders make thinner the higher they raise them, and subjects the whole structure to danger.

3rd. It robs the family of a whole floor, and gives it to cats and sparrows. I say that a five storey house with a conical roof is a five-storey house, and with a flat roof is a six-storey house.

4th. It robs the poor cockney of his country view. It is astonishing how much of the country can be seen from the roofs of most London streets. A poor fellow who works all day in a hole might smoke his evening pipe and see a wide tract of verdure—but the builders have denied him that; they build the roof for cats, and the "curse of families," they do not build it for the man whose bread they eat.

5th. It robs poor families of their drying-ground.

6th. This idiotic blunder, slightly aided by a subsidiary blunder or two, murders householders and their families wholesale, destroys them by the most terrible of all deaths—burning alive.

And I seriously ask you, and any member of either House who is not besotted with little noisy things, to consider how great a matter this is, though no political squabble can be raised about it.

Mind you, the builders are not to blame that a small high house is, in its nature, a fire trap. This is a misfortune inseparable from the shape of the structure and the nature of that terrible element. The crime of the builders lies in this, that they make no intelligent provision against a danger so evident, but side with the fire and not with the family.

Prejudice and habitual idiotcy apart, can anything be clearer than this, that as fire mounts and smoke stifles, all persons who are above a fire ought to be enabled to leave the house by the roof as easily and rapidly as those below the fire can go out by the street door?

Now what do the builders do? They side with fire; they accumulate combustible materials on the upper floors, and they construct a conical roof most difficult and dangerous to get about on, but to the aged and infirm impossible. Are, then, the aged and infirm incombustible? This horrible dangerous roof the merciless wretches make so hard of access that few are the cases, as well they know by the papers, in which a life is saved by their hard road. They open a little trap door—horizontal, of course; always go against God Almighty and his laws when you can; that is the idiots' creed. This miserable aperture, scarcely big enough for a dog, is bolted or padlocked. It is seven feet from the ground. Yet the builder fixes no steps or stairs to it; no, get at it how you can. What chance has a mixed family of escaping by this hole in case of fire? Nobody ever goes on that beastly conical roof except in case of fire; and so the bolt is almost sure to be rusty, or the key mislaid, or the steps not close; and even if the poor wretches get the steps to the place, and heave open the trap, in spite of rust and gravitation, these delays are serious; then the whole family is to be dragged up through a dog hole, and that is slow work, and fire is swift and smoke is stifling.

A thousand poor wretches have been clean murdered in my time by the builders with their trap door and their conical roof. Thousands more have been destroyed, as far as the builders were concerned; the firemen and fire-escape men saved them, in spite of the builders, by means which were a disgrace to the builders.

But in my next, sir, I will show you that in a row of houses constructed by brains not one of those tragedies could ever have taken place.—I am, Sir, yours very truly. Charles Reade.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Dr. G. G. Zerffi delivered the thirty-third of this course of lectures on Tuesday afternoon last. In completion of the subject of Byzantine art, the lecturer said that Byzantine metallo-technic was extremely well finished and very highly developed. Much of this work consisted of plates of metal indented or stamped with certain devices or patterns, into the interstices or arrises of which a softer metal or several softer metals were pressed or hammered. This work presented somewhat the appearance of damascened or Saracenic work. Here and there animal forms were employed as nuclei for flowing, scroll-like ornamentation. The general effect produced by this interwoven scroll-like work was that of golden or silken network. Byzantine art was also rich in mosaics, obtained by the process of stereotomy. Byzantine art was, in reality, a kind of early Renaissance of Greek art. The mosaic work of Byzantium was, however, very different to the mosaics of the fifteenth, sixteenth, and nineteenth centuries, although the art was brought to great perfection by the Byzantines. Their choice of colours was excellent; primary colours were almost exclusively used, secondaries being only employed occasionally to give a softer appearance to the work. In their pictorial mosaic work, the colours were those of the materials used themselves, and pieces of coloured stones and marbles were laid together and cut in position to bring about the desired result, which was required to be the effect of an oil painting. This was altogether a faulty employment of a wrong material. The art of painting consisted in taking fluid pigments of various colours and shades, and coating the surface to be painted with them in accordance with the subject of the artist. *Painting* could not be done with stone. Shade was wanting in these productions of the Byzantines, and light and shade were spiritual things. The East, however, always remained true to the stereotomical development of art—always kept true to solid matter, but it erred when it tried to blend pieces of solid coloured matter together to bring about a picture. Stereotomy was an art which, in itself, had a certain aim, that aim being altogether mistaken by the Byzantines. But in later times the art of making mosaic pictures has been immensely improved, and the schools of Italy have succeeded so far as to bring about a real kind of free flow and interblending of the colours, so that at a certain distance a mosaic picture can hardly be distinguished from an oil painting. Having alluded to the high value of mosaic as a decorative material, on account of its comparative indestructibility, the lecturer proceeded to describe the great use which the Byzantines made of gold and silver, remarking that whenever and wherever gold and silver were very largely used for purposes of ostentatious display, it was a sure test that that age or that nation was barbarous. Art, amidst all this ostentation, did not prosper. The intrinsic value of a large nugget of gold was so great as to render its wearer or possessor an object of attention or envy without any aid from the goldsmith or chaser. Large diamonds, for this reason, were often badly "set" in comparison with stones of a much smaller size, while stones of little or no value in themselves were often greatly enhanced in value by the "setting" with which they were surrounded. In the first church of S. Peter's, at Rome (which was a basilica), gold and silver were used to a very large extent, even the flooring in some parts of the edifice being paved with those precious metals. On the altar and round about the altar the greatest lavishment of these metals was, of course, to be seen. Rich and sumptuous as the effect must have been, it could have been nothing in comparison with the extremely rich appearance of the churches of Byzantium. The sacred vessels, cups, patens, chalices, censers, and all parts of the building, were immensely gorgeous and rich in form, the gold and silver work being further ornamented, enriched, and set off by being inlaid with large precious stones. Each of the candlesticks or candelabra was in the form of a high column (of gold, in many cases), and on top was a tazza on which incense was kept burning. At this time (about 949 A.D.) gold was more and more used for domestic as well as for religious purposes. Liutprand describes a grand dinner given by the Emperor, at which the viands were served up in very massive dishes and vessels of gold, which had to be wheeled along the tables on little carriages, as they were too heavy to be carried. In fact, luxury reached its highest pitch in this era. The altars in the churches were at first in the form of a common four-legged table; sometimes, however, five legs were used (one in the centre), symbolical of the five wounds of Christ. Later they were of marble, and in the epoch of luxury and ostentation referred to they were sometimes of silver and sometimes of gold. Another part of the altar was the tabernacle, in which the *sanctum sanctorum* was always kept. It was a kind of baldachin or canopied structure, and was, in design, a mixture of the old Greek and the then more generally spread style of the Mahometans. Then the *flabellum*, an instrument used to drive away the flies from the Eucharist, was of gold; generally it had the shape of a six-winged seraph. The chairs for the bishops differed very slightly from those in use at the present day. The perfection of the organ by the Byzantines was well worth noting. It was said that the Etruscans invented or introduced the organ, but the Byzantines first used bellows with that instrument. At first the organ was never played at church but only on the occasion of lay festivities. Later on it by degrees began to take an important part in the services of the church. As to bells, the Buddhists had in reality the first so-called temple bells. It was curious to note that the Mahometans and also the Greek Church abhorred the sound of bells, whereas in the Western Church bells had been universally used ever since their introduction by Bishop Paulinus four centuries after Christ. The first bells were of course very primitive and queer in tone, and were formed of sheet metal. Later, however, tin and silver were used, the bells being cast in moulds to the required form. Architecture as well as sculpture and all the ornamental arts had in the West an aim, that aim being. from the time that Christianity became the guiding spirit of the Teutons, to represent Christian ideas in visible forms. Christianity was a religion of love, and the new faith turned men towards one another, towards Nature, and then heavenwards. The Christian artist had a double aim—firstly, to impress the beholder with true forms; and, secondly, to convey some idea through those true forms—and in time the Christian artist came to be a great Christian teacher and preacher. Art was then all concentrated in the monasteries, and was, of course, ecclesiastical and dogmatic in feeling. Everything was designed to symbolise something else, and the mere purpose was very often made to excuse even a very ugly shape. Gradually the artists demanded to think for themselves, and art began to be less fettered and conventional. The lecturer concluded by minutely comparing Byzantine and Romanesque art—a subject which he will continue in his next lecture, as far as it has reference to Early Gothic architecture.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute on Monday evening last, Mr. E. I'Anson, V.P., occupied the chair, in the absence of the President, Mr. T. H. Wyatt. The minutes having been read and confirmed, and several donations to the library announced, Mr. H. W. Peek, M.P., was unanimously elected an Honorary Fellow, and Mr. Robert Fellowes Chisholm, F.M.U., of Madras, was ballotted for and declared duly elected as a Fellow.

The Chairman then stated that the President's promised paper "On the Liverpool Exchange" had been unavoidably postponed, and that papers would be read that evening as follows:—

"On the Uses of Concrete as a Substitute for Stone in Walling, &c. By T. Wonnacott, Associate.

"Remarks on Concrete Building." By A. W. Blomfield, Fellow.

These papers were among those announced for the Sectional Meeting devoted to "Construction and Science," during the recent Conference. They were, however, only read in part, and were therefore substituted for the President's paper.

Mr. Wonnacott having read his paper, Mr. Eastlake, the secretary, read Mr. Blomfield's paper (in the unavoidable absence of that gentleman). As these papers were only in M.S., which could not be lent to the reporters, we shall wait until the papers are printed by the Institute before giving them in our pages. They (especially Mr. Wonnacott's) were full of figures and dimensions, and as they were read very quickly it was not possible, with any degree of accuracy, to take a shorthand note of them.

A discussion ensued, in which Professor Kerr, Mr. Hebb, Mr. Payne, Mr. Charles Barry, Mr. Thomas Morris, Mr. Gilbert R. Redgrave, and the Chairman, took part, and the thanks of the meeting having been tendered to the authors of the papers, Mr. Wonnacott briefly replied to the remarks made on his paper, and the proceedings terminated, after the announcement by the President that

The closing ordinary general meeting of the session will be held on Monday, the 19th inst., when a paper "On Cistercian Architecture" will be read by Mr. Edmund Sharpe, of Lancaster.

The annual *conversazione* will take place on the 28th or 30th instant.

GODWIN & CRISP'S PREMIATED DESIGN FOR THE BRISTOL ASSIZE COURTS.

On April 21, No. 850, we gave illustrations of Messrs. Godwin & Crisp's premiated design for the Bristol Assize Courts, and at the same time promised to give the premiated design submitted by them at the second competition. We now fulfil the promise. We omitted to state, in our article on April 21st, that the competition took place in 1866. It will be remembered that we stated that at the first competition Messrs. Godwin & Crisp bore away all the honours by winning the three prizes. But exception was taken to the decision on the ground of some trifling misunderstanding about the exact size of the site. The unsuccessful competitors and certain civic authorities were of opinion that fair play could only be done by having a second competition. Mr. Waterhouse, who acted, as we think, with great judgment and determination in the matter, thought otherwise; but in the contest general interests succumbed to local influences, and a second competition was agreed on. One of the conditions of the second competition was that no one architect should carry off more than one prize. In the second competition Mr. Street was selected as arbitrator. He decided that Messrs. Popes and Bindon were entitled to the first prize, and Messrs. Godwin & Crisp deserved the second prize. This decision was final. We gave a double-page illustration of Messrs. Popes & Biudon's design, January 15th, 1869, No. 732, and this week we pay a similar compliment to the design of Messrs. Godwin & Crisp. It may be asked, Why give a design that was not carried out, and so long after the competition? And we ask in return, Why not? If a thing is good, it is good for all time—

"A thing of beauty is a joy for ever."

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SUBJECTS FOR MEDALS AND PRIZES, ROYAL INSTITUTE OF BRITISH ARCHITECTS, 1871-2.

(SECOND ISSUE, WITH ADDITIONS.)

Royal Medal.—Her Majesty having been pleased to grant her gracious permission for the Royal medal to be conferred on such distinguished architect or man of science of any country as may have designed or executed any building of high merit, or produced a work tending to promote or facilitate the knowledge of architecture or the various branches of science connected therewith, the Council will proceed, in January, 1872, to take into consideration the appropriation of the gold medal.

At the special general meeting held on Monday, the 6th March, 1871, the following recommendations of Council, with reference to the medals and prizes for the year 1871-72, were read and agreed to:—

DESIGNS.

Soane Medallion.*—That the Soane medallion and, under certain conditions, the sum of £50, be awarded for the best design, well illustrated by a sufficient number of drawings, for the following subject:—A town hall of moderate size in a country town, on a site 150ft. by 100ft, with a public thoroughfare on two sides only (south and east). The drawings (with the exception of the plan and sectional portions) to be in outline only. Two plans of the buildings, two elevations and one section (drawn to $\frac{1}{8}$in. scale), with one perspective view and one sheet of details—in all seven drawings—will be required, and no additional drawings will be examined in reference to the award. The further award of £50 will be made to the successful competitor upon satisfactory arrangements being made for his going abroad for a period of six months to pursue his architectural studies within two years after receiving the medallion. The £50 will be paid in two instalments of £25 each: the first when the Soane medallist leaves England for the Continent, and the second when he shall have submitted to the Council satisfactory evidence of his studies abroad, in the form of drawings and sketches, after an absence of six months.

MEASURED DRAWINGS.

The Silver Medal of the Institute, with five guineas, will be also awarded for the best illustrations, geometri-cally drawn from actual measurement (with dimensions figured both on the drawings showing the general arrangements and on the details), together with descriptive particulars of an abbey gateway, a bridge, or other building of importance—Classical or Mediæval—in the United Kingdom or abroad, hitherto unpublished in that manner. The Council suggest the following as being subjects worthy of illustration, but many others may equally well be taken, if more convenient to the competitor:—

Ireland	Cashel Cathedral.
"	Christchurch Cathedral, (Or any Monastic or Conventual Building).
Kent	Bayham Abbey, near Tunbridge Wells.
Lincolnshire	Tattershall Castle.
Middlesex	Front of Dover House, Whitehall.
"	Law Fire Office, Chancery-lane.
"	Entrance Gateway, Middle Temple Lane.
"	Temple Bar.
Northamptonshire	Warmington Church.
Nottinghamshire	Steeples of Grantham and Newark.
Scotland	Dryburgh or Melrose Abbey.
Shropshire	Lilleshall Abbey.
Wales	St. David's Cathedral.
Yorkshire	St. Mary's Abbey, York.

The drawings to consist of at least one plan drawn to the scale of $\frac{1}{8}$th, or (in case of very large buildings) 1-16th of an inch to the foot, an elevation and a section, drawn to the scale of $\frac{1}{8}$th of an inch to the foot, with details to a scale of half an inch to a foot, and mouldings one-fourth full size. The elevations to be in line, without shade lines, the plans and sectional portions to be tinted in sepia. Perspective drawings may also be sent, and may be tinted in sepia or Indian-ink. The jointing of the masonry is to be particularly marked, together with the mode of construction and materials used. It is strongly recommended that the rough drawings be plotted on the spot, and sent up to the Institute with the fair drawings. [This medal is open to all members of the profession, without limitation as to age.]

ESSAYS.

Institute Medal.—That the silver medal of the Institute be awarded to the author of the best essay on the following subject:—"Windows and their appliances, treated historically, artistically, and practically." A medal of merit may be awarded for any other essay or essays, if deemed worthy, upon suitable subjects selected by the authors themselves, without limit or number. All the essays to be written very legibly on alternate pages of lined foolscap paper, and to be accompanied by suitable illustrations.

Students' Prize.—For students of the Institute only. That the designs submitted in competition for the student's prize in books, for the year 1871, be one or more of the following:—"A staircase within a space of 28ft. by 16ft. in a domestic building three stories high; an entrance porch and hall for a town house; a brass candelabrum, 9ft. high; a ventilating turret or large smoke shaft (200ft. high) to an extensive range of buildings; a gas standard for five lights. The drawings to be executed to any scale. The plans and sections to be tinted in sepia, and the elevation to be in outline, sepia, or colour. Perspective drawings are not necessarily required, but may be sent in outline, or tinted in sepia or Indian ink.

MR. PEEK'S PRIZES.

(Open to all members of the profession under twenty-five years of age.) The following special prizes have been placed at the disposal of the Council by H. W. Peek, Esq., M.P., Hon. Fellow, for competition by candidates whose age does not exceed twenty-five years, on condition that the drawings for which prizes are awarded shall become the property of Mr. Peek.

Eastbury Manor House.—The sum of £42 for the best, and £20 for the second best set of measured drawings, illustrating the restoration of Eastbury Manor House, near Barking, Essex—viz., a plan of the ground floor (including the walled-in garden upon the eastern side) drawn to a scale of $\frac{1}{8}$in. to a foot, with the names of the various rooms, &c., marked thereon, according to their supposed former appropriation. A sheet of details, drawn to a a scale of $\frac{1}{2}$in. to a foot—viz., a plan of one of the octagonal tower staircases, with a section of one revolution; a plan and section of the closet or garde-robe on the upper floor; an elevation and section of part of the garden wall, showing the small recesses therein; a plan and elevation of one of the ornamental chimney stacks; elevations (drawn to a scale of $\frac{1}{4}$in. to a foot) of the north, east, and west fronts in outline only; a perspective view (about 18in. by 13in. in size) tinted in sepia only, and showing three sides of the quadrangle; a short history and description of the building in manuscript.

The Convent Gateway.—The sum of £10 for the best set of drawings illustrating the restoration of the Convent Gateway, Barking—viz., a plan (drawn to a scale of $\frac{1}{4}$in. to a foot) of the ground and upper floors; an elevation and longitudinal section to the same scale; a perspective vignette view, tinted in sepia only, about 7in. by 6in. in size; a short history of the conventual building in manuscript. [Competitors for the above prizes may have access to the Institute Library, on presenting a letter of introduction from a member of the Institute.]

DIRECTIONS FOR COMPETITORS.

Each essay and set of drawings is to be distinguished only by a motto, without the name of the author attached; and is to be accompanied by a letter, sealed with a blank seal, and having on the outside the same motto as that attached to the essay or drawings, and enclosing his name, with an address to which a communication may be sent. The packet, directed "To the Secretaries of the Royal Institute of British Architects," and marked Essay for Medal (or) Drawings for Medal (motto), is to be delivered at the rooms of the Institute on or before the 31st of January, 1872, carriage and all expenses paid.

The names of the successful competitors alone will be made known.

Should none of the essays, drawings, subjects, or buildings respectively be deemed by the Institute of sufficient merit and importance to deserve the distinction of the premium offered in each case, they reserve to themselves the right of awarding such other premium in lieu thereof as they may deem fit, or of withholding it altogether; and if the best essay or drawings should be by a candidate who has been successful on a former occasion, they reserve the power of adjudging such other reward as they may think fit, and of awarding the medals to the second in merit. All essays and drawings will be returned to all the candidates, on application, to the unsuccessful after the adjudication, and to the successful after the presentation of the medal.

Copies of the premiated essays and photographs of the perspective views or principal drawings to which a prize is awarded will be required to be furnished by each of the successful competitors for deposit in the Institute Library before Midsummer, 1872.

Strict compliance with all the above directions is required.

PUGIN TRAVELLING STUDENTSHIP.

Candidates for the above studentship are requested to send in their applications, together with specimens of drawing, testimonials, &c., as required by the deed of trust, (copies of which can be obtained at the Institute), on or before 25th January. 1872. Extract from the schedule appended to the deed of trust:—"Every person of whatever nation shall be eligible as student, who shall be more than eighteen and less than twenty-five years of age, provided that he give to the electors satisfactory evidence of his moral character, and satisfy them that he is a student of architecture, *bonâ fide* intending to practise the profession of an architect, and that he exhibits specimens of his drawings and state the district of the country which he proposes to visit, and the class of buildings which he intends to study."

Any further information may be had on application to the Secretary, Mr. Charles L. Eastlake, at the rooms of the Institute, 9, Conduit-street, Hanover-square; or by letter prepaid.

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COMPETITION.

Mullingar.—The Bishop's residence competition terminates thus:—"Dear Sir.—The Episcopal Building Committee, Mullingar, feel compelled, must reluctantly, to reject all plans sent in. One class having the requirements, being far too expensive, and much above the sum mentioned in the advertisment; the other, for not having the necessary accommodation, and consequently not acceptable. The plans will be returned, with many thanks, carriage paid, if required.—By order, Thomas O'Reilly, Secretary, May 16th, 1871." Which is most reprehensible, the violation of the rules of grammar or of common fairness? Really this is too bad. It was evidently an utter impossibility to comply with the requirements both of cost and accommodation as usual, and the onus falls upon the customary victims.—F.

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The S. George's (Hanover-square) Board of Guardians, it is stated, contemplate the erection of a new workhouse to accommodate one thousand inmates, at S. Ermin's-hill. Three eminent architects are to be consulted on the matter as to the suitability of Ermiu's-hill, and whether the site is sufficiently large for the contemplated building.

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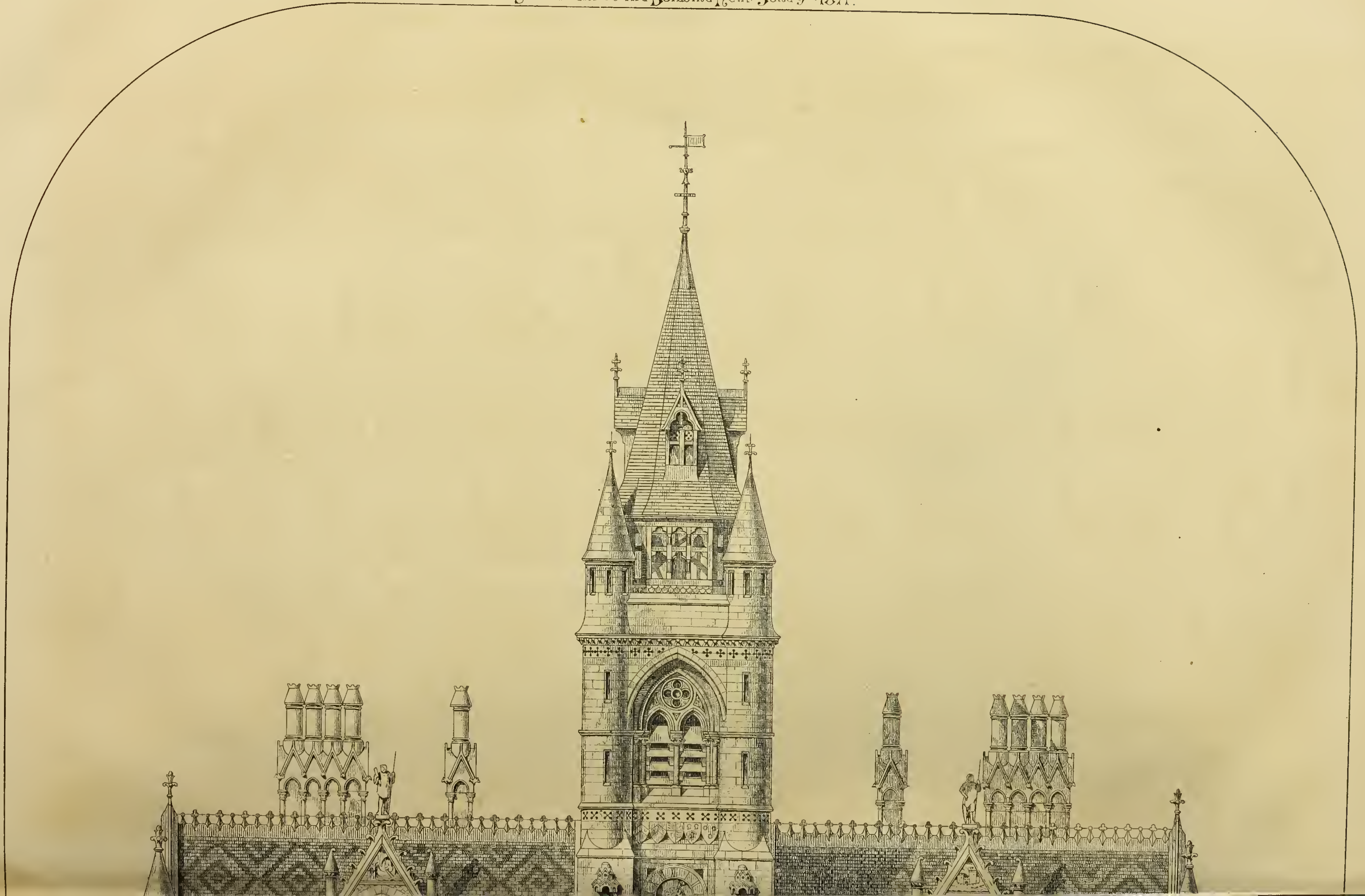
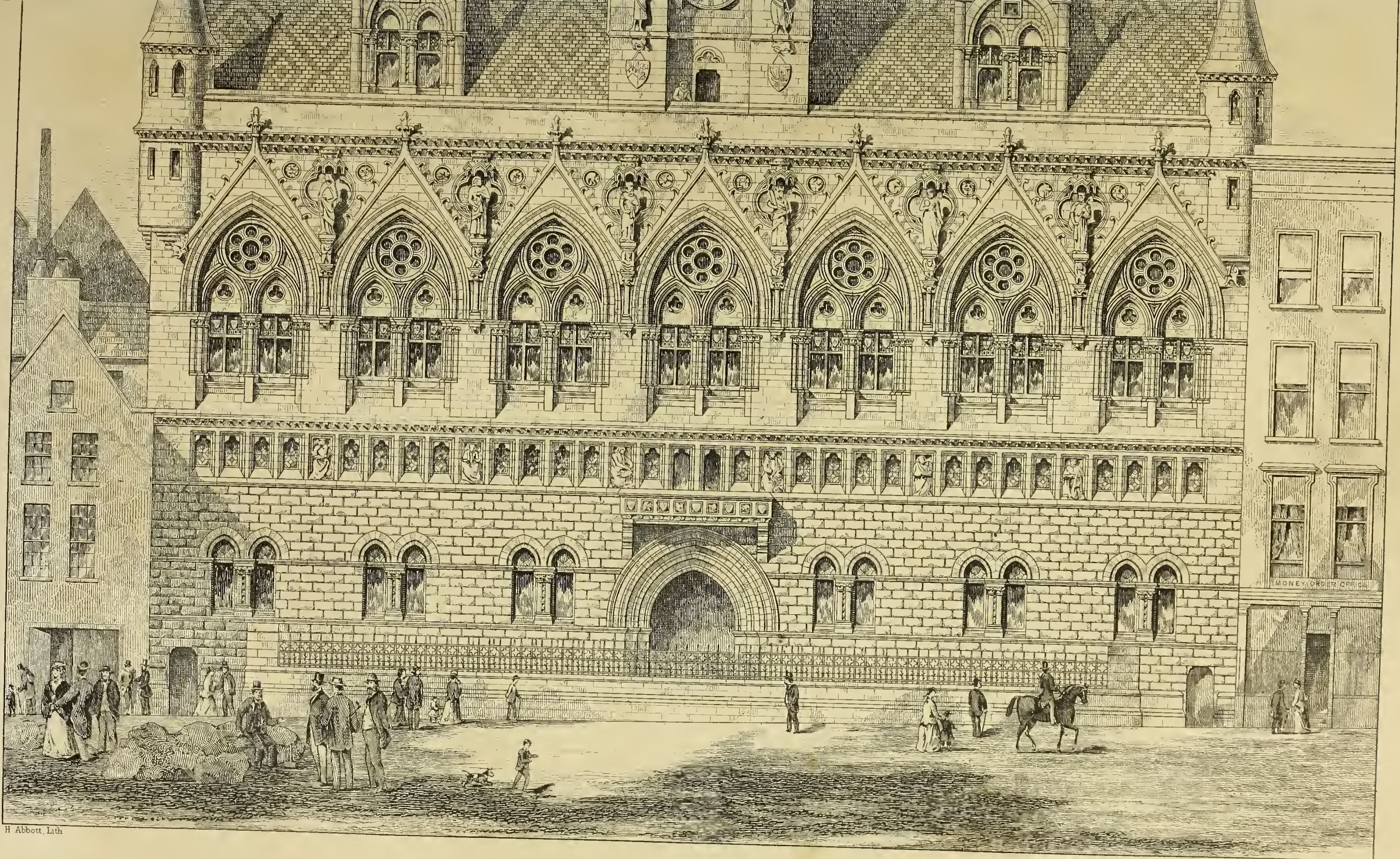
* The competition for the Soane medallion is open to all members of the profession under the age of thirty years.

Supplement to the Building News June 9th 1871.





H Abbott, Lith

Printed by Whiteman & Bass

PREMIATED DESIGN FOR ASSIZE COURTS, BRISTOL.

GODWIN & CRISP, ARCHTS

SOUTH KENSINGTON FAN-CIES.

A HARD day's work at the Exhibition may have exhausted our spirits, or our lunch too long deferred injured our digestion; we can hardly otherwise account for the fit of spleen into which we fell when, on emerging from the refreshment department, our eyes fell upon the series of designs for fans placed in a conspicuous position upon each side of the passage from the Meyrick gallery. We have long had our views as to the character of the art training of the South Kensington authorities, but we had hardly realised the baneful result to which it has already tended, notwithstanding the prophecies we have often indulged in that no other end was possible.

The inscription "Prize Awarded" upon some drawings of humming-birds upon sprays of foliage did not at first arouse our attention, although it was evident that those ornithological representations were altogether out of place, as, by folding the fan, they would be doubled up more completely than when they were mere yolks within egg-shells, and after some repetitions of this unnatural operation they could hardly fail to receive some indelible creases.

The tempting consideration passed through our mind that bad might have been the best of the designs submitted in competition, and that the authorities were not to be blamed for the bestowal of the prize, in sorrowful deference to justice, to the best of the bad. When, however, our eyes caught sight of the inscription upon other specimens of a still worse description above, labelled "Commended," our patience forsook us. "Deplored" would, we should have thought, have been far the more appropriate remark of discriminating judges. Can sane masters teach, or sane pupils consent to learn, or sane judges approve designs for fans consisting of landscapes with trunks of trees dissevered from their branches by the practical necessities of the curvature of the outline of the fan, limp ribbons meandering among flowers, imitation lace, scenes on rivers and lakes, and such like? Among the whole collection not one design accords in the slightest degree with the requirements of the object proposed to be thus decorated. Common sense and every canon of taste are violated glaringly in every single example. Why this should be the case, when every fan that comes from China or the East is a sensible and beautiful object, we are at a loss to conceive. We pity and deplore the waste of time and talents which this exhibition of designs discloses, but we impeach the teachers and judges either of gross ignorance or culpable betrayal of their office. A fan is a combination of parts, the decoration of which should be separate and distinct, and yet harmonious the one with the other. To cut up a picture spreading over the whole, and fold it to put into the pocket, is a piece of barbarism of which a South Sea Islander would be ashamed. How, then, is it possible that in civilised England, and in this nineteenth century, we can find such not only perpetrated, but actually labelled "Commended" by authority?

STAINED GLASS AT THE INTERNATIONAL EXHIBITION.

(*Continued from page* 414.)

THE manufacture of painted glass, inasmuch as it pretends to partake of the nature of an art, is ten times more open to the complaints we had to find with the manufacturers of furniture. We mean that under the names of the same firms we find work good, bad, and indifferent. It is obvious that this arises from the occasional employment of able artists for special works, while the ordinary work turned out is left to men of much lower class. If these exhibitions are to do any good in raising the character of this highly interesting branch of artistic manufacture, it can only be, as we pointed out in our last, by the rigid insistance on the part of the authorities that the names of the actual artists be appended to the several works, as well as that of the firm who may have executed and contributed it. At present, with but few exceptions, the specimens of painted glass sent are of very indifferent quality, or we might say of no quality whatever—at least, of any proper kind. Common-sense is yet kept at bay by either fashion or prejudice in most of the work of this class by all nations. England, however, bears away the palm, in that some glimmering of right principles has been forced upon even manufacturers of the article, and some artists have turned their attention to the special requirements of the art. But most foreign nations generally, and the Munich school, apparently, in particular, are hopelessly sunk in a Slough of Despond in which they are contentedly and complacently floundering as if they had nothing to regret. It is with sorrow, therefore, that we read in Mr. Penrose's paper "On the Decoration of S. Paul's Cathedral," that the three more windows required for the apse "must be procured from the royal manufactory at Munich," and the still stronger assertion by Mr. Beresford-Hope in his speech at the Institute in connection with that paper, that, with regard to the stained windows, "they would be of Munich work, as the committee had pledged themselves." We had hoped, from the words of Mr. Penrose, that the apse alone would be thus disfigured, for he said, in continuation, "that he did not consider it would be necessary to look to Munich for any more painted windows;" Mr. Hope's belief that they "would be consummate works of art" positively astounds us. Nor can we agree with Mr. Penrose in thinking that the Munich glass is "admirable in drawing, and only fails in texture." Of the Munich works in Glasgow Cathedral we have previously given our opinion, and of the specimens in the International Exhibition we have done the same in our last notice, and without hesitation declare it to be hopelessly and radically bad. We will now proceed to an investigation of the other examples exhibited at South Kensington. No. 2,375, north-east staircase, "The Education of the Virgin," by H. Dobbelaen, is a work of considerable merit and originality of treatment, the effect of which is, however, lost from the glare of light from the adjoining windows. The Virgin and her teacher are seated in a reverential attitude, with hands clasped over a scroll which, rather quaintly, is turned upside down, as far as they are concerned, for the benefit of the spectator. The drawing of the figures, the expression of their countenances, and the quiet and subdued character of the colouring of their dresses, are good. They are seated on a bench, the detail of which is bizarre, and the foreground is filled with naturalesque, and the background with conventional foliage, which are not much in accord, but their effect would doubtless not be bad in a more favourable position, though it seems rather coarse in juxtaposition with the figures themselves. The whole is surrounded by an atrocious border of gold fleur-de-lis, with spandrils of an unvaried and violent blue. These inconsistencies would lead one to think that the design for the figures and ornamental portions were furnished by different hands. No. 2,403, east-side room No. 12, is a vigorous heraldic composition for the "Bavarian Arms," Von W. Swertskoff, of Munich. This is very violent in colour, and exaggeratedly fantastic; still it is powerfully and well drawn, and being tolerably in one plane the faults inherent to Munich glass are not so conspicuous as in other examples of the school. Wrong throughout in principle, yet considered as a decorative transparency for some Renaissance building, which could throw no stones at it on the score of its own superior purity, this is a work of talent not to be passed by with the contempt we have seen elsewhere expressed for it. In the same room is a three-light Perpendicular window, No. 2,388, by H. Hughes (Ward and Hughes), close alongside of which is a single-light window by the same artist. The contiguity of these is wofully injurious to each example. However, although the work of this glass painter is not without some power, the whole character of the treatment is modern and vicious. Thus, in the single light, the Nativity is treated like a transparent coloured lithograph, with a landscape background, and yet is overshadowed by a conventional canopy of Late Gothic foliage. This latter portion of the work, by the bye, is very good of its class, pearly in tint, and well drawn. In the south-east staircase, Mr. Charles A. Gibbs has a large semi-circular-headed window, filled with a transparent picture of our Saviour receiving little children. We can only repeat that such treatment in stained glass is wrong. Landscapes are falsified by black lead lines creeping along the outlines of hills. The colour in this particular example is very indifferent, and not improved by the glaring red in the top of the Renaissance framework, and this portion of the work, affecting equally corrupt architecture, is clumsy and heavy in the extreme. Discordant and violent colour mars the three-light window by Lavers, Barraud, and Westlake, in the left-hand compartment of the same staircase. The subject that is treated in this specimen is the Crucifixion. The drawing is moderately good, and the treatment as regards the material is unobjectionable, but the canopy work is coarse in outline and detail, and violent and disconnected in colour. No. 2,391 is a Renaissance window, occupying the remaining compartment on the right-hand side of the staircase. The design is by F. W. Moody, carried out by Messrs. Powell, of Whitefriars. Here an architectural composition, with the central portion in perspective, but from a point of sight no spectator can place himself at, stands out against a sky stratified like a slate quarry. In front of the temple a Roman emperor of strangely-short proportions, and clad in red and rose, is executing a sort of *pas-de-deux* with an allegorical female, whose train is upheld by a pair of naked infants engaged in some animated discussion, while two excited masters of the ceremonies are vainly striving to attract the attention of the principal performers to control or restrain their eccentric proceedings. In a sort of apartment disclosed below some brilliantly-coloured scrimmage is represented, with blue legs and yellow arms in violent action, the purport whereof we failed to perceive.

The north-west staircase has another powerful and portentous transparency in the centre compartment, contributed by Messrs. Lavers, Barraud, and Westlake. The subject is, apparently, the angel appearing to the three Marys at the Sepulchre. The kneeling figure is well drawn, fresh and harmonious in colour, and would be well if painted in an opaque material, and no great exception need be taken to the other standing figures had they also been so painted. But the violent unshaded ruby of the virgin's nimbus and angel's wings would spoil any picture. For the distracting Renaissance architectural border work we have no commendation, and any merits the picture itself may have are neutralised by the contempt shown throughout to all the proprieties of glass painting. Nightmare-like groups of ill-drawn figures in horrible colours, sent by Messrs Cox & Son, disfigure the windows at the sides of this staircase, and their toleration by the authorities speaks little for their discernment. Messrs. Cox & Son have been more fortunate in the artist they have employed for their window which occupies the central opening in the south-west staircase. For domestic work this is an interesting and suggestive example. The wide, semi-circular-headed window is divided into nine oblong panels below the springing of the arch, and three above. The former are counterchanged with alternate designs of delicate and subdued colouring, with circular and oblong panels respectively in the centres, with groups of birds and plants touched with gold. But the central panel of all has a nice and rightly-treated coloured group of two damsels gardening. The upper part of the window is not so good, nor does it seem by the same artist. Here a seated figure holds some apples in a cloth, and is placed before a background of blue, bordered with conventional foliage. We are glad to be able conscientiously to commend this design, and wish we were favoured by the name of the artist, for to Messrs. Cox we can grant little credit, seeing that they blow hot and cold with the same mouth. This south-western staircase is altogether fortunate in the reticence of colour displayed in all its windows. The side openings are filled respectively by works by J. Gamble, executed by Messrs. Powell and by Mr. Moody and assistants, and contributed by the Science and Art Department. Their merits are negative, and consist mainly in that they are not obtrusive, being principally in grissaille ; what colour there is introduced we regard only with satisfaction, inasmuch that there is so little of it; and for the fantastic arabesques and Renaissance architectural portions we care less than nothing. The figures in Mr. Moody's window are injured by the lead lining, for though only delicately shaded, they are shaded as figures upon glass should not be.

In the south-west galleries, Room 24, are some ornamental glass transparencies,. exhibited by Messrs. Chance, of Birmingham, noticeable as examples of what to avoid, and some glass manufactured by Mr. Rust, which shows what wonderfully beautiful material is ready to the hand of our glass painters. Would that they knew how and when to use it! J. P. S.

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LONDON: ITS COMMERCIAL CENTRES, AND THEIR INFLUENCE ON THE VALUE OF LAND.

A VALUABLE paper with this title was read by Mr. E. I'Anson, F.R.I.B.A. (than whom, perhaps, no one is better competent to deal with the subject) before the members of the Institution of Surveyors on Monday, the 22nd ult., Mr. R. Hall, President, in the chair. After a vivid and interesting historical sketch of London as it was fifty-five years ago, and of the many subsequent changes in the architectural aspects of the metropolis, he described in detail the localities where the chief branches of commerce and industry were and are carried on, and having done this very ably, he proceeded to point out the influence which these great centres have upon the value of property. On this branch of his subject he said:—

To be in a market is, we all know, of great importance; it is something to be in London, itself one vast emporium and mart, but it is more still to be in the market itself. For this reason, the land in the great market of London—the money market—is the most valuable land in London, and perhaps the most valuable land in the world. What do we observe now in the hoarding round the new building erecting at the corner of Queen Victoria-street and the Poultry—little boxes, where sellers are established in the vast line of traffic which passes this locality. What rent they pay, I do not know; but I do not doubt it is something considerable for mere standing room in the midst of commercial London.

Something like £40 per superficial foot for the freehold is, I believe, the highest price obtained for land in this great centre, but this is an exceptional case, and probably about £30 may be stated as the average maximum value which ground has yet reached in the very heart of England's metropolis. This large value, however, extends over a very limited area. It comprises a part of Cornhill, but hardly extends beyond Finch-lane to the eastward, or westward beyond the Liverpool and London and Globe Insurance offices, at the corner of Lombard-street and Cornhill.

The highest quoted value of land in my experience was in Lombard-street; but, as before stated, I consider this quite exceptional. Lombard-street itself, in its best part, would not exceed two-thirds of the value of the land in Cornhill; whilst at the eastern end of Cornhill the land does not reach a value exceeding one-third of its maximum value opposite the Royal Exchange.

Taking, as I do, the Royal Exchange as the centre of the commerce of London, it is in this immediate neighbourhood that land reaches its maximum value. If we go either eastward or westward of the Royal Exchange the value of land rapidly declines; eastward, at the end of Cornhill, it is already only worth about one-half (10s.) a foot what it is worth at the Royal Exchange. If we cross over Bishopsgate-street the value decreases to about one-fourth of the maximum (5s.), and when we get as far east as the Minories the land there has almost reached its minimum value in the City of London.

In Bishopsgate-street Within, where are to be found the great commercial houses of Baring Brothers, Antony Gibbs and Co., and one or two more large mercantile firms, the value of land is about intermediate between its value at the eastern end of Cornhill and the western end of Leadenhall-street.

Proceeding in another direction, along the line of Lombard-street, the land here retains its value more nearly through its entire length than it does in Cornhill and elsewhere. Lombard-street is in the line of thoroughfare to the great commercial centres of colonial trade, and, with Fenchurch-street, may be taken at about one-third, or somewhat less of the maximum value, falling to about one-fourth, or even one-fifth, as it approaches Mark-lane; beyond that point it passes the commercial centres, and rapidly falls in value.

There are now two great lines of thoroughfare tending westward, one leading along Cheapside and Ludgate-hill to the Strand, and the other along New Queen Victoria-street to the Thames Embankment. On the former thoroughfare, about as far west as Bucklersbury, the traffic is the densest in London, as computed by Mr. William Haywood, the Engineer of the City Commissioners of Sewers, and referred to in a masterly pamphlet drawn up by him, urging the necessity of opening up new thoroughfares in the City.

As far west as Bucklersbury, the land in the Poultry, especially on the south side of the street, attains very nearly its maximum value. A very recent letting, at the corner of New Queen Victoria-street, will attest this assertion. Beyond Bucklersbury the price gradually falls. I have hardly any data precise enough to give an exact proportion, but I am, probably, safe in saying that along the western part of Cheapside and (as far as the western end goes) of Ludgate-hill, that the land hardly realises more than one-fourth of its maximum value. Along the Strand, as far as Charing-cross, about one-sixth is, probably, the percentage, although, perhaps, this is rather low for corner situations.

If we take the new line of Queen Victoria-street, from the Mansion House to Blackfriars, there have already been sufficient dealings in the land bordering on the street to prove that the value rapidly declines in proportion as we leave the great centres of value and commerce. The extreme eastern portion of the street fully maintains the maximum value; but it falls to about one-half a very short distance westward, and from one-fourth to one-fifth at the western end of the street.

If we follow the line of Cheapside in the direction of Holborn, the value of land still decreases as we go westward, until—notwithstanding the impetus given by the magnificent viaduct, which now blots out what was for long that great disgrace to London, the Holborn valley—the land hardly realises one-fourth of the maximum value; although in one instance (a corner plot) it reaches about one-third.

Southward of the Royal Exchange, in the narrow lanes which, until they were cut in two by the opening of King William-street in 1831, were very unimportant thoroughfares, the land reaches about one-third of its maximum price, until at the southern end of these lanes, next the river's bank, its value does not much exceed one-tenth of the maximum, and that only in the portions nearest to London-bridge on the west.

Northward of the Royal Exchange, except immediately adjoining the Bank—that is to say, in Bartholomew-lane, Throgmorton-street, Lothbury, and Tokenhouse-yard, which are in close proximity to the money market—the land does not exceed about one-half of the highest value, and beyond that it rapidly falls, until, in Finsbury, it realises not more than from one-fifteenth to one-twentieth of the full value.

In Bishopsgate-street Without the value falls rapidly, and in the small streets running westward out of Bishopsgate-street, such as Sun-street and Skinner-street, houses and shops were, until quite recently, when their value has been somewhat improved by the passage of the North London Railway, letting at rents almost as low as the most distant parts of London.

There has always been, and still exists, an almost unreasonable difference in the value of land on the south side of the river and that upon the north side. In the best thoroughfares, land on the south side of the Thames scarcely realises one-fifteenth or one-sixteenth of the maximum value of City land, and when at only a moderate distance from the river, and, indeed, when close upon it, it hardly goes beyond one-fortieth of the maximum—viz., about 6d. a foot. Immediately adjoining, however, the south end of London-bridge the land changed ownership by the acre at something over the highest proportionate rate I have just referred to, and in the line of New Southwark-street, in one favourable corner plot, it reached six-twentieths of the full value.

These statements of value, most of which are founded upon my own personal experience, I, however, only offer to you as approximate. There must always be exceptional conditions, such as corner sites, aspect, light, convenience of access, suitability for special buildings, non-liability to interference by adjoining owners, and so on, as well as the pressing necessities and prodigality of some of the great houses of business requiring extension of accommodation, which considerably influence the value of property in certain localities.

Besides the great lines of thoroughfare I have referred to, converging towards the central point of importance and value, there are also, as I have endeavoured to point out, other centres or foci of value, which are scarcely less valuable than those I have already enumerated. For example, I have recently heard of land, in the centre of the Manchester trade or market, being valued as high as the land in the close vicinity of the Royal Exchange.

It is curious to observe, however, within how short a distance the value of land varies. For instance, in Friday-street the maximum value of land is asked and obtained; but within a stone's throw of that spot,—in Monkwell-street, for instance,—its value falls to one-eighth of the maximum. And in the old City lanes intersected by King William-street, there is a very notable difference between the value of land on the north and on the south side of that thoroughfare.

The difference between the highest and the lowest value of land in the City may be stated as about 1 to 20; for I take 20s. a foot to be now about the maximum value, and 1s. a foot as about, although not quite, the minimum. I think I am right in saying that land let for residential purposes in the most fashionable districts of western London does not reach more than from one-sixth to one-eighth of the maximum value of land in the City proper.

We are all familiar with the vast differences in the value of property which have occurred in the course of the last half century. It would not, I think, be at all excessive to say that, in the localities comprised within the before named markets, the value of land has at least doubled during the last fifty years, and that in the more important trade centres within the City of London it has been fully quadrupled.

I have purposely refrained from alluding, by name, to any case; but one special instance occurs to me in illustration of my remarks. The Hanseatic towns had, from a very early period, a wharf in Upper Thames-street, near London-bridge, called the Steel Yard. Here, shut in within their own walls, they had their own mercantile centre and depôt for goods, just as, I believe, is still the custom in Chinese cities. The piece of ground covered just 60,000 feet superficial. The Hamburghers, to whom the Steel Yard belonged, sold this ground, through their engineer, Mr. Lindley (who has done much to raise the town of Hamburg from the ruin in which it was plunged by the disastrous fire of 1842), for exactly £1 a foot, or just what I now take to be the minimum value of land in the City. This was not more than some twenty years ago, and a few years since it was sold for, I believe, £3 a foot. The site of the Steel Yard is now covered by Hawkshaw's City terminus of the South Eastern Railway.

I have no sufficient data with reference to the value of land in other great cities to which I can refer, so as to quote figures, but I have a general impression that land in London has arrived at no excessive value as compared with other localities, and that it is a value which, so long, as we remain a commercial country, will be maintained, and even increased.

I can quote some instances of the value of land in Paris. The land in the new street from the Place de l'Opera to the Rue de Rivoli, was *sold*, in 1869, at from £68 to £72 per square mètre for corner plots, or from £6 6s. to £7 per foot, taking 10 feet superficial to equal a mètre. On the Boulevards the land, however, only fetched, at the same time, £5 a foot; but these prices are, by no means, I believe, the highest prices for land which have been obtained in Paris. In the centre of the city (viz., round the Bourse), and upon the inner Boulevards, land realises, if I recollect rightly, quite as much as, or more than, land in London.

At New York I believe the same condition of things prevails; and, two or three years ago, I was not a little surprised to find what a high price land realised at St. Petersburgh, in the midst of the commercial centres of that great, but at the same time not very commercial, city.

When we reflect that whilst in the year 1811 our whole population did not exceed twenty millions, and that of London was under one and a-half millions, whilst at the present time the population of London probably reaches to nearly four millions and the population of the United Kingdom to something like thirty millions, whilst the amount of gold in circulation has very largely increased, especially since its discovery in Australia and California, and wherever land remains the same in quantity (a remark which strongly applies to the commercial centre of London), it is almost a natural consequence that the value of land in London, and more especially in its great commercial centres, should have increased in the proportion which it has done.

The confined area within which business is transacted in the City, and the enormous increase in the population which is continually going on, must inevitably lead to the displacement of certain trade centres and a consequent variation in the values of property. Some of these changes may be already anticipated by a consideration of what has occurred in analagous cases; but it is, of course, impossible to foretell, with any degree of accuracy in what direction the exodus will take place, and what may be the extent of the land which will be required to meet the wants of an ever-growing population.

Were it possible to forecast what will be the future centres of value, or to define what will become the great lines of traffic, we might, there is no doubt, make a very practical use of this knowledge. The very complex social system under which we live, the force of habit and a complacency which makes us satisfied with things as they are, renders it extremely difficult to effect changes or improvements, and the partial manner in which nearly all alterations are carried out makes it almost impossible to predict, with any certainty, the effect of such alterations upon the value of land within the metropolitan area.

That some important changes are inevitable may be inferred from the extraordinary development that has taken place in some branches of trade, and on the other hand the almost total collapse of some of the most important industries upon which we formerly relied.

As an instance of the changes which affect us, may be mentioned our trade with the colony of Australia, which has sprung up entirely during the present century, and has now assumed very remarkable proportions.

I may cite the removal of Smithfield Market from the middle of London, which caused considerable disturbance to business, affected the value of land to some extent, and caused, probably, some cases of individual hardship in consequence of the value of ground having declined for a time; but the erection of the New Meat Market, and the alterations which have been effected in the neighbourhood, have once more raised the character of the site, and in all probability rents are now higher in Smithfield than they were before the removal of the market. The planting of the market at Islington has largely tended to the development of the property in the neighbourhood, and the preservation of a large unoccupied space is no doubt beneficial in a populous overcrowded locality.

The transfer of the meat market from its ancient *habitat* in Newgate-street to the handsome and commodious building in Smithfield which it now occupies has also, to some extent, influenced the value of land in the former locality, but there can be little doubt that the area of the old market will be rapidly absorbed by other trades in the vicinity (probably by the bookselling trade), and a proper equilibrium established.

The removal of public offices from the interior of the City to the more western part of London has tended to relieve the plethora of population, which, at times, threatens to choke the City. The transference of the Government of India from the East India Company to the Crown in 1855, by the Act 21 & 22 Vict. c. 106, rendered the East India House in Leadenhall-street unnecessary, and its site became available for the erection of offices.

The Excise Office, in Old Broad-street, which was built on the site of Gresham College in 1774, was, in the same manner, removed to Somerset House, on the incorporation of the Board of Excise with that of Stamps and Taxes in 1849, and the Old Excise Office was converted into offices and re-named Gresham House.

The South Sea House is another example of a somewhat similar transformation, a portion of the premises being occupied by the Oriental Banking Corporation, and the remainder by the Baltic Coffee House and sale-rooms.

The Hudson's Bay Company's premises in Fenchurch-street, after having remained unlet for a considerable time, have been recently let, and converted into private business offices.

It has been lately proposed to remove the Royal Mint from its present position on Tower Hill, to some more convenient locality, and the Thames Embankment has been suggested as a fitting spot. This matter, however, is for the present in abeyance.

Whatever changes have occurred, or may supervene, in other departments of commerce, it is tolerably certain that the money market will always remain in the heart of the City, and there is, therefore, little reason to fear that the value of land in the neighbourhood of the Bank and the Royal Exchange will suffer any diminution. Cornhill, and the streets in its vicinity, must always be the centre of London, and the centre of business activity, and it is not easy to imagine any alteration, short of a political cataclysm, hitherto happily unknown in this country, which could in way deteriorate from its value. The recent removals of the capital of Italy from Turin to Florence, and from thence to Rome, as well as the possible abandonment of Paris, are, no doubt, suggestive facts, but I venture to think that, so far as we can form any opinion of future events, London will always remain the centre of imperial British commerce, and the City of London the focus of commercial activity.

All the statements I have made with regard to comparative values have been founded upon knowledge acquired in my own practice and experience.

I have hardly felt at liberty to cite the particular data upon which I rely for the facts contained in my paper to-night; but my chief object has been not to state precise values in particular districts, but to point out the really intelligible causes which determine the value of land in certain localities, subject to special and constantly shifting circumstances, which, as you all well know, must be taken into consideration in every instance.

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MORE PUBLIC STATUES FOR THE METROPOLIS.

THERE have just been issued copies of a Treasury Minute appointing a committee to report on open air spaces in the vicinity of the Palace of Westminster available for statues of statesmen, and of the report of the said committee. The committee on appointment were requested to report as to—1st. The open-air spaces advantageously available in the immediate vicinity of the Palace of Westminster for the statues of statesman. 2. The number of statues which such spaces ought to accommodate, "regard being had to all the considerations derivable from the laws of art which go to determine the question." 3, The manner in which these spaces might progressively be occupied by new statues from time to time without presenting the appearance of mutilated or incomplete arrangements; and 4. The rules as to the size of the statues, or other particulars, which ought, in their judgment, to be borne in mind, with a view to the ultimate exhibition of an effective and harmonious whole. The committee express their opinion that the only open-air spaces at present available for the statues of statesmen in the neighbourhood of the Houses of Parliament are the two gardens in Parliament-square, opposite the gateways of New Palace-yard, and if the central avenue between them were widened from 20ft., its present width, to 28ft., ten statues could be comfortably accommodated there, without crowding. In addition to this site, the four truncated angles of the square would afford suitable positions for eight more statues, and when the proposed clearances are effected in Old Palace-yard and Abingdon-street, other sites for statues may become available; but, as the committee truly remark, it is hardly requisite at present to take this point into consideration, for, although they have indicated sites for eighteen statues, they are given to understand that only four statues are, or will be shortly, available; indeed, they seem to anticipate that some little time will elapse before a sufficient number of statues will be found to fill up the gardens in Parliament-square. They evidently, however, do not wish to give offence by alluding to the present dearth of statesmen, for they suggest that six pedestals should be at once provided—the empty pedestals to be surmounted by vases of flowers, until statesmen are found to fill them. With regard to the dimensions of bronze statues to be erected in Parliament-street Gardens, the committee are of opinion that they should, as a general rule, be one half larger than life size—in other words, the statue of a man 6ft. high in life would be 9ft.; one 5ft. 6in. 8ft. 3in., and so in proportion. These dimensions to be inclusive of the plinth of about 5in. on which the statues should stand. To make all of a uniform height appears to the committee undesirable, as they consider it preferable to retain approximately at least the same variety of height as exists in life, and there can be little doubt the committee are right in this view, for great statesmen are often diminutive men in private life.

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ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—The annual meeting of the Royal Archæological Institute of Great Britain and Ireland for the year 1871 will commence at Cardiff on the 25th of July, under the presidency of the Marquis of Bute. The presidents of sections will be:—Antiquities, the Earl of Dunraven; Architecture, Mr. G. T. Clark; History, Mr. E. A. Freeman.

THE NORTHERN ARCHITECTURAL STUDENTS' SOCIETY.—The second annual meeting of this society was held on the 31st ultimo, at the Literary and Philosophical Society's rooms, Newcastle-on-Tyne. This brought the winter session to a close. The president (Mr. W. L. Newcombe) delivered an address, setting forth, among other matters, the desirability of popularising the art of architecture, concluding with a few words to the members, encouraging them to renewed exertions in the pursuit of their profession. The report of the committee was read and ordered to be printed, together with the treasurer's statement as to the finances of the Society. The election of officers for the ensuing year then took place, with the following results:—President, Mr. W. L. Newcombe; vice-president, Mr. W. H. S. Thompson; hon. sec. and treasurer, Mr. Joseph Oswald; committee, Messrs. Bedlington, Oliver, Reed, and Thornhill. The out-door meetings of the Society during the summer will shortly commence.

OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.—The members and their friends, to the number of about thirty, assembled on Saturday week, and started in two drags to Ensham, for their third excursion this term. On their arrival they inspected the remains of the village cross. Mr. James Parker gave a brief account of the early history of the place, and of the foundation of the Abbey. Of all the towns and villages within the immediate neighbourhood of Oxford, Ensham is the first which we find mentioned in any historical record. Of the buildings, beyond the traces of foundations to the west of the church, nothing is now remaining. Mr. J. H. Parker then described the church, which is a building of the fourteenth century, with the fifteenth century addition of the north aisle; the alteration of the piers of the south aisle, which are of singular oblong plan; and the restoration of the west end and addition of a tower, situated at the west end of the north aisle. Some of the windows are remarkable, but the aspect of the church is still much marred by the presence of unsightly galleries. On proceeding to Stanton Harcourt, the Rev. W. P. Walsh, vicar, received the party at the church. The nave contains a doorway and window showing its twelfth century origin. The central tower, with the vaulting beneath, and the two transepts, as well as the chancel, are all of the thirteenth century, and perhaps the finest specimens of that age of any parish church in the neighbourhood of Oxford. The arrangement of the windows in triplets, and the curious thirteenth century wood screen, were pointed out, as well as several other interesting features. The party then visited the private chapel, and ascended Pope's tower, visiting the room in which he wrote. Afterwards they went to the kitchen, many ascending to the top to examine the mode of attaching the ancient "luffer" board by which the draft for the smoke was regulated. Throughout Mr. J. H. Parker acted as *cicerone*, lecturing on the several details as they were passed in view. On returning, the party stopped to visit the interesting church of Cassington. This church, consisting of nave and chancel, is a Norman structure of the first half of the twelfth century, the corbel table and parapet remaining very perfect, and the chancel retaining the original vaulting. The spire has been added to the Norman tower, and windows inserted in the Norman walls in the time of Edward II. The west window of the same period is a curious instance of the approach of the foreign Flamboyant tracery.

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Preston, Lancashire, is at last to have a new railway station and adjuncts. The affair has received the sanction of the various companies concerned, and will be open for tenders as soon as the drawings, specifications, and quantities—now rapidly preparing under the direction of Mr. C. Axon, the North Union Railway Company's engineer—are completed.

Furniture and Decoration.

GILDING AND ORNAMENTING ON GLASS.

BY AN EXPERIENCED WORKMAN.

(*Continued from page* 393.)

SOLID gilt or gold grounds are much used for window plates and glass signs for all purposes, and when the gold is uniform in solidity of surface, and of a bright clear burnish, the effect cannot be surpassed for brilliancy. There are two methods of painting on gold grounds, namely, by first painting the letters or ornament upon the glass, and then gilding the ground; but there are numerous objections to this method, although it is much practised. In the first place, we are not able to make the edges of the letters or ornament as sharp and clean cut as they ought to be; and secondly, when we gild the ground we find that there is a sort of greasy exudation from the paint which injures the burnish of the gold, and thus we have an imperfect work. We have invariably found it best in all cases to gild the ground first solid, and pounce or trace on the ornament or letters, then paint in the ground with the Brunswick black or other backing, leaving the ornament uncovered; when dry and hard we wash the gold off the ornament and letters. We thus produce sharp and clear outlines, better in every respect than by any other method. We can, of course, now proceed to paint in the letters or ornament solid black or in tints of colour, as may be desirable. The outline being secured, no after-manipulation can interfere with it, which leaves us at much greater liberty to mix and blend the colours than we otherwise could do, which in practice will be found to be a great advantage. Much care and experience is required in the mixing, laying on, and manipulating the transparent shading and grounds in this kind of glass painting. Varnish colours are a necessity, inasmuch as there being no suction or granular surface for the paint to hold to, oil colour does not harden, and is liable to blister and peel off. Richly coloured grounds may be produced by first glazing or coating the glass with a transparent colour, in varnish first, and then laying on a solid colour on the back. This solid colour may be put on either in distemper colours or in varnish colours. Ultramarine blue, burnt sienna, madder lakes, and any of the other lakes make good glazing colours for this purpose. The ultramarine blue and sienna will require to be used with a sufficient quantity of varnish to keep them transparent, the ultramarine especially having a tendency to dry of a lighter hue than it will appear when first mixed with the varnish. We have named distemper grounds for glass, and our experience has proved to us that in all cases where the ground is not exposed to direct contact with wet, or even for outside work when it is properly protected, distemper grounds are best, and will stand the variations of temperature better than either varnish or oil grounds. This arises from the fact that distemper will expand and contract, according to the state of the atmosphere, without either cracking or chipping, and this will go on for any length of time (that is to say, if the distemper is properly mixed); while varnish colour is but too apt to both crack and peel when exposed to alternate heat and cold, dry and damp, and the longer it stays upon the glass the harder it gets, and the more liable it becomes to crack and peel and lose its hold. For all white or other light-coloured grounds, milk will be found to be the best vehicle for mixing with the best Paris white, dry white lead, emerald green, and all tints of colour used for this purpose; these must be ground in water to a stiff paste, then thinned to a working consistency with milk, which has sufficient binding power to fasten the colour to the glass. In laying on distemper grounds it is necessary to flow on sufficient colour to form a solid body, as it is not possible to put on more than one coat by reason of there being no suction in the glass, and therefore in grounding, the glass should be laid flat, and the colour put on freely with a large flat camel-hair tin tool. In many cases the colour may be poured upon the glass from the pot, the glass being afterwards moved about until the colour has covered the whole of the surface of one uniform thickness; by this means we obtain a solid and even ground. In using varnish colours it will frequently happen that the ground will require two or three coats before it is solid; this will, of course, depend upon the nature and amount of body the colour possesses which we are using. Solid colour, such as Indian red, and all the gradations of brown and chocolate, which may be made by adding black to Indian red for chocolate, burnt umber to Indian red, black and Prussian blue and Indian red, or the immense variety of bronze colours which may be made by a mixture of Indian red, Brunswick green, and ochre or orange chrome. All these will cover and appear solid with one coat, but ultramarine blue, emerald green, lakes, and all pulpy or spongy colours will require two or more coats. Green, lake reds, and in fact all transparent colours when merely used to colour or tint white lead, may be made to cover with one coat, but even in these cases it is better to give two coats.

A bad impression as to the durability of this kind of work is often produced by carelessness in mixing the grounds, and insufficient protection afterwards. Often do we see examples where the colour and gold is partly peeled off the glass, and the work of course has to be redone. As we have before said, gilding on glass will not stand, except it be protected from the influence of alternate heat and cold, damp and dryness, therefore we would advise that in all cases where practicable, the work should have another square of glass glazed at the back of the finished work, either ground glass or plain; we may by this means hermetically seal up the work between the two, and thus protect it effectually both from the weather and from injury in cleaning. Ground glass makes an admirable background for gold and colour, without obstructing the light, and beautiful illuminated tablets may be done by putting the gold capitals and ornaments upon one sheet of plain glass, and the colours and filling upon another sheet of ground glass. The colour of the ground glass serves for the ground, and we thus obtain a brilliancy in the gold, and that flatness and deadness in the colours which we could not possibly get by painting them upon the plain glass, the two glasses, of course, forming one design, the colours being painted upon the ground side of the glass, and the two being glazed in together, if put into a window sash; but if put into a frame the edges of the two glasses, when put together, may be secured by covering them with strips of calico, saturated with patent knotting. The two glasses being placed close together, these strips are laid on and doubled on each side, and when they get dry and hard another coat of the knotting may be brushed over them, and thus they will be secured from injury. When gilding is done upon large squares of glass, such as shop windows, and it is not practicable to cover them with an additional square, we have found the best plan, when the letters are written, is to give the whole of the letter and ornament one or two coats of the best copal varnish, covering the glass to the extent of one-eighth of an inch beyond the outline of the letter or ornament. This, if allowed to get hard before being disturbed, will protect the work for a much longer period than any other method we are acquainted with, and, of course, the light is not interrupted except by the letters themselves.

In walking through the streets of the metropolis many beautiful examples of glass gilding and lettering may be observed on the facias of shop-fronts. Many of these are on gold grounds with black letters and white grounds with gold letters, raised or made to imitate letters of wood, which stand out or project from the surface. We will not stay here to question the taste or propriety of this kind of work. Suffice it that the effect is good and pleasant to look upon, and that it serves the purpose for which it is intended and made. We look upon it as a conventional rendering of a simple effect. Many of these raised and shaded letters are excellently done, the gradation of colour being exquisitely blended. This is effected in the following manner:—After the letters are written, the shadows, or rather the raised block, is marked out on paper, and placed so as to be a guide behind the glass. The shades which are to be blended are then laid on in their proper places, dark, light, and middle shades; the whole is then blended one into the other with the badger-hair softener, or a large camel-hair dabber. In doing this it is not necessary that we should keep exactly to the outline, because all the straight lines may be cut perfectly straight with the chisel and straight-edge, as before described, and the curves may be wiped off with a clean rag or chamois leather while the colour is wet, or the straight lines may be cut while wet by using a chisel of hard wood, and wiping afterwards. We thus produce sharp square edges or lines, which cannot be produced by any other method. When this is dry the parts must be painted in with a solid ground colour in accordance with the colour of the shading. The shading may be done with either transparent or body colours. If done with transparent colours, tube colours should always be used, being finely ground and free from grit, and in consequence may be laid level, which is a necessary condition of success. We have hitherto spoken of this system of gilding as applied to glass by hand work alone, but it has also a wide application in connection with printing and transferring from copper-plates. A method of transferring from engraved copper plates to glass was registered some fifteen years ago. The outline and shading of a design were strongly engraved on copper, the printing colour being made with linseed oil boiled to the consistency of a strong jelly when cold, finely ground or powdered ivory black being mixed with the oil to form the printing ink. The copper-plate was then heated on a stove, and the ink being laid upon it in its heated state, became thin or softened by the heat, and was then easily pressed into the lines of the engraving by a boss or dabber made for the purpose; the superfluous ink or colour was then taken off with a broad-bladed palette-knife, leaving the lines filled with the ink. A specially prepared paper was then brushed over with a thin wash of soap-lees, and while wet laid upon the copper-plate, and quickly covered with printers' blanket, the whole being then subjected to the pressure of an ordinary screw printing-press, and while it is still warm, the paper is taken off, bringing the ink with it. The impression is then laid upon the glass to be ornamented, and rubbed well with the hand or with a rubber, and when it has stayed some time, the printing paper is then washed off with a sponge and water; this is now put into a stove to harden. It may then be cleaned and coloured, and gilt whereever required.

It will be at once evident that elaborate designs, such as coats of arms, ornaments, &c., may be thus executed without the aid of highly skilled labour; that is to say, after the design is put upon the glass ordinary labour may be used for gilding and colouring afterwards, under efficient superintendence, of course, and thus the cost of such works may be reduced so as to ensure a wide application and use. Another method in which printing from copper may be used on gold is as follows. First gild the object to be ornamented (which may be a tea-tray) with leaf gold, using the isinglass size as a vehicle, just as if it were for gilding on glass, but the size may be used a little stronger. The ink to be used must be mixed so that it will not get dry and hard, but in such a manner that turpentine will liquefy it. The impression is taken off the plate in the manner before described, and transferred on to the gold; the paper is washed off, and then the superfluous gold is removed with cotton-wool, and left perfectly clean. We now use turpentine and a soft brush to remove the printing ink, and when that is removed the design will appear in gold, having a brilliant burnish, much brighter than if the ordinary oil-size was used and the gold laid on afterwards. It will, of course, be understood that the copper plates have to be engraved in a special manner for this work. They require to be cut deeper than for printing upon paper, in order that a sufficient quantity of colour may be conveyed to the glass or gold, to prevent the water moving it, and also to avoid bare places, for except the gold be covered it will break up in the washing, and for broad spaces of an inch wide or less a particular kind of cross hatching is required, so so that it may hold and print a solid mass of colour. The mixing of the colour or ink will require some experience, solidity and tenacity being indispensable. Many attempts have been made to accomplish this object by means of the lithographic process, but it is found that we cannot carry a sufficient quantity of colour from the stone to the glass or paper work to secure the gold, or to print upon the glass, and therefore the lines are ragged, and the solid or broad parts pinholy. It will be seen from what we have said that there is a very wide field for the application of this kind of decoration; and if some method could be found or invented to secure two slabs or sheets of glass permanently together, holding the gold and decoration thus secured between the two, we should have a permanent means of decoration for our public and private buildings which the architect and decorator might use with advantage. It is said that we have no choice between glass mosaic and fresco; the first being so costly that we cannot raise money enough to use it in sufficient quantity even inside St. Paul's Cathedral; and the latter, being perishable, is, to some minds, objectionable. Glass decorated as above described would, we venture to think, be in the hands of some of our first architects a happy medium; at all events, we venture to throw out the suggestion, with the hope that some one may discover the best means of utilising it.

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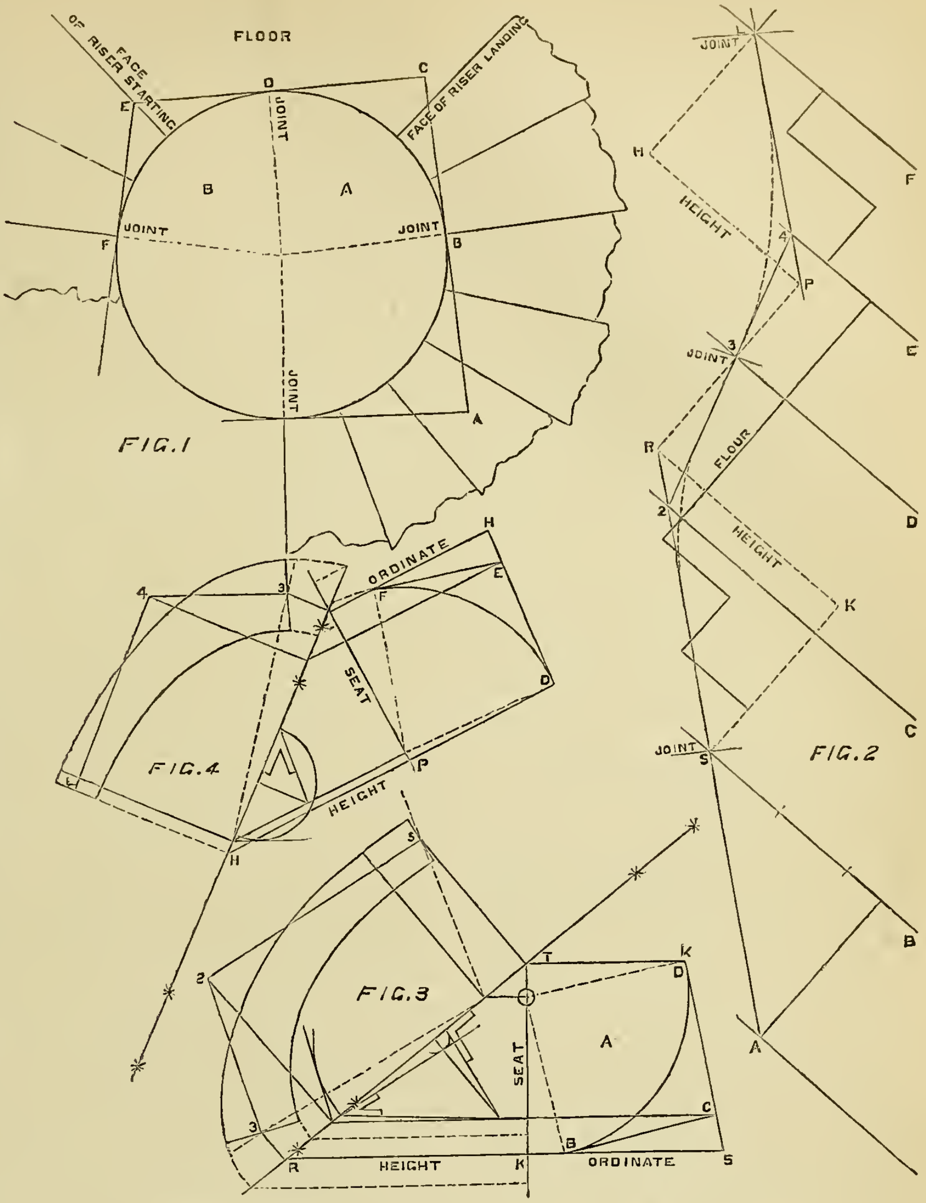
Decrease of Wood in America.—The report of the United States Department of Agriculture comes to the startling conclusion that such is the wholesale destruction of American forests, there will be an actual famine for wood in the country within thirty years, unless immediate measures are taken to supply their places by new plantations. It is estimated that from 1850 to 1860, 20,000,000 acres of timber land were brought under cultivation, and that in the present decade no less than 100,000,000 will be so reclaimed.

Bits Stolen from the People.—An evening paper says:—It is a remarkable circumstance, as evinced by the discussion which took place in the House of Commons on Thursday week, that the existence of Hamilton Gardens should be considered a misappropriation of a portion of a public park, when there are a score of other enclosures which might equally be considered a just cause of grievance. A considerable portion of Regent's Park is fenced in and forms garden ground for villas situate within the park. The public are also excluded from a large portion of the park contiguous to the ornamental water; indeed, up to 1838 the public were shut out altogether from Regent's Park. Yet assuming Crown property to be public property, "the people" should be allowed to roam all over it according to their inclinations. Then, again, there is a very pleasant bit of garden at the back of Downing-street, belonging to the house of the First Lord of the Treasury, in which house no First Lord now ever lives; there are trees and flowers and shrubs, and a croquet lawn in this garden, yet "my lords" at the Treasury are far too busy in the board-room ever to play at croquet



NEW ELEMENTS OF HAND-RAILING.—PLATE XXXIII.

NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 394.)

Plate 33.—Construction of Wreath Landing and Starting for Circular Stairs.

The wreath is often made to present a most wretched appearance, by having a portion of it fall level: which should not be the case, unless the riser landing and that starting stand very far apart. This is seldom the case.

Anyone knows that if a rail be continued from story to story, its pitch over the winders meeting that on landing causes a broken and crippled appearance, and seems like two different curves of unequal radius.

This cannot be altogether avoided at the landing of circular stairs. The wreath, however, may be very much improved by having no part of it on the landing fall exactly level.

The following method may be adopted:

Fig. 1 shows position of riser landing and that starting.

Let one piece of wreath stand over five winders. The pitch of this regulates all the others. The joints are now B, D, F. Draw the tangents A, B, C, D, E, F, which unfold on a board (shown at Fig. 2).

The letters along the margin correspond with those on plan. Square over a line, say that from A. Then set off two risers and a half. Next, set off two winders, and draw floor, cutting at E. This letter shows position of risers starting on plan to left.

We are now ready to draw the pitches.

Commence below, and join A S extended. Then draw from L, cutting through 4, and parallel with A S. Join 4. 2. This is the pitch standing over the floor.

To find the heights, and a direction for ordinates: Draw through joint 3, cutting at R and P. Next, square over from L, and up from P, giving P H as height for upper piece of wreath, and L H the direction for its ordinate.

Find the height of lower piece of wreath by squaring over S K, giving K R as height, and S K the direction for ordinate.

Draw this mould shown at Fig. 3.

Let tangents B, C, D equal those on plan having corresponding letters.

Make K S equal K S on the right. Join S B extended. This is the ordinate. Make the seat square with it, cutting through O. Next, draw from C and K parallels with ordinate. Let K R, the height, equal that of K R on the right. Join R T extended. You are now ready to draw the mould. See that S 2, 3 equal corresponding letters on pitches to the right.

Fig. 4 is the mould for upper piece of wreath. Let tangents D, E, F correspond with those on plan. Make D H equal H L on the right. Join H F, the ordinate. Make the seat square with it, and cut through the point which struck the circle.

Next draw from E and D parallel with ordinate. Let P H, the height, equal that of P H on the right.

Draw from H through intersection of seat and ordinate. Extend this line to the left. The drawing is now ready for the mould.

Lines 3, 4 L, to be correct, must equal the pitches on the right, having corresponding letters.

You will see that no bevel is given for joint L; it being so near the minor axis as to make the line L 4 nearly parallel with the pitch on major axis. So that bevel could not be conveniently shown.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

PARLIAMENTARY NOTES.

The Thames Embankment.—Mr. W. H. Smith asked the First Commissioner of Works on Monday when it was intended, under the powers of the Act 30 and 31 Vic. c. 40, authorising the Commissioners of Works "to acquire lands and to construct an embankment for the security of the Houses of Parliament, and for the improvement of the approaches thereto," to proceed with the removal of the houses which had been purchased, and were now in the possession of the Office of Works, and with the construction of the embankment; and, whether there was any truth in the report that the Office of Works contemplated the delay or suspension of the works authorised by the Act, and the re-letting of the buildings which they had acquired under its powers.—Mr. Ayrton said that he was not aware that her Majesty's Government had arrived at any determination to pull down these houses, but no new works of the kind could be carried out unless an estimate were first laid on the table of the House, and the money voted. No such estimate had been prepared, and, therefore, nothing would be done during the present financial year.—Mr. W. H. Smith asked if the premises were to be re-let.—Mr. Ayrton said that if they were not pulled down they would be turned to the best account, and they would, of course, be available for any service that might be determined upon.

The Bethnal-green Science and Art Museum.—Mr. C. Reed wished to know from the First Commissioner of Works when the Museum of Art and Science in Bethnal-green—the first money vote for which was taken in 1867—would be completed, and whether he was then prepared to name a day for the public opening of the same.—Mr. Ayrton was understood to say that the construction of the works had been placed under the superintendence of Colonel Scott, who was instructed to make designs for it. He (Mr. Ayrton) had been led to believe that it would be completed at an early day, but he had received a letter from Colonel Scott, fixing the completion of the exterior for the 1st of October next. A great part of the building was, however, now ready to be occupied. He was not prepared to state what course would be pursued in this particular case, but under ordinary circumstances the building would be handed over to the Department of Science and Art, when the President could decide on the proper course to be taken as regarded the opening.

Park-lane.—In answer to Lord Bury, Mr. Ayrton stated that from the information supplied to him by the Board of Works, he had no reason to doubt that the new street between Park-lane and Piccadilly, through Hamilton-place, would be available for public traffic on or before the 19th inst.

Hamilton-gardens.—On Thursday week Mr. Denison moved that an address be presented to her Majesty, praying that she would be pleased to direct the Commissioners of Woods and Forests to restore Hamilton-gardens to the public.—Mr. Ayrton lamely defended the present appropriation of public property for the benefit of the neighbouring householders, and apparently satisfied the House of Commons, Mr. Denison's motion being defeated by a majority of 47.

Statues of Statesmen in Westminster.—Sir J. Pakington asked the First Lord of the Treasury whether he intended to adopt the plan recommended by the committee appointed by the Treasury "to report upon the open air spaces available in the vicinity of the Palace of Westminster for the statues of statesmen;" and, whether the committees for erecting the intended statues of Lord Derby and Lord Palmerston were to understand that it was the final decision of her Majesty's Government on this subject to carry out the plan referred to.—Mr. Gladstone said that there was no intention on the part of the Government to take the report of the committee as a final document disposing of the whole question. The facts were these:—The right hon. baronet opposite, and other gentlemen acting with reference to the subject, made an application to him, there having been a good deal of difference of opinion as to the mode in which the open spaces in the vicinity of Westminster might be made available for the purpose. He felt that this was a matter in which those that came after us had a very great interest; and considering how often they had had to go backwards and forwards in matters of architecture and taste, his desire was, not that any opinion of his own should prevail, but that the opinion of the House, and of the country, should be devoted to the question, so that they might have the best assurance possible that a satisfactory settlement would be arrived at. He had therefore thought it best to make a reference to gentlemen whose position and acquirements would add weight and authority to their opinion. They had reported their opinion, but it would be necessary that he should hear what his right hon. friend the First Commissioner of Works had to say on the subject, and the object of laying the papers before the House at that early date was principally to direct the attention of hon. members and of the country to it, in order to subject it to the widest possible criticism and comment before arriving at any decision upon it.

Building Intelligence.

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CHURCHES AND CHAPELS.

Dewsbury.—On Whitsun-Tuesday a new Roman Catholic Church at Dewsbury was dedicated to Our Lady and S. Paulinus. The style is Early English, and the cost rather under £10,000. Mr. E. Welby Pugin is the architect.

Fulford Church, near York.—This beautiful church, which was erected by Mr. J. P. Pritchett, architect, of Darlington, has just been further embellished by the introduction of a mosaic reredos, and the entire decoration of the chancel walls and arch and side transepts, under the superintendence of the same architect. The reredos, which is composed of five panelled arcades, has the centre one filled with an "Agnus Dei," represented in a circle, around which is a border of a geometrical design, the upper part of the panel being filled in with a foliated design of the Passion-flower. The other four panels are similarly treated in design, but having an emblem of one of the Evangelists in each circle. The small quatrefoil openings in head of reredos are also filled in with mosaic. The wall space at each side of the reredos is covered with the new painted tiles, the design of which is rich foliated ornament of Early character, surrounding the Alpha and Omega. The dado also has been covered with the same kind of tiles, on which is painted a geometric diapis. The walls of the chancel are covered with a brick pattern, having a broad border of coloured ornament carried under the wall plate and around the arches and windows. Above the chancel arch the same style of ornamentation has been adopted, and a text inscribed over the arch as follows:—"This is none other but the House of God." On the walls of the south transepts, the Creed, the Lord's Prayer, and Ten Commandments have been illuminated, and the remaining portion of the wall covered with a brick pattern and coloured borders. The mosaics were executed by Messrs. Salviati & Co., of London, from cartoons furnished by the architect, Mr. J. P. Pritchett, and the whole of the tile painting and decoration is by Mr. G. J. W. Knowles, of York.

Longdon, near Rugeley.—A new transept to S. James's Church, was opened by the Bishop of Lichfield on May 30th. It is in the Early English style of architecture, and built of the light red stone of the district with ashlar inside walls. The roof is of fir, boarded on the underside of the rafters in seven cants, and having principals resting upon plain corbels. The whole of the windows, with the exception of those on the north side, have been filled with painted glass. The seats are plain and open, and provide free accommodation for 147 persons. The roof is covered with green slate, and the cost of the whole, including a new vestry, exceeds £1,000. Mr. Albert Hartshorne is the architect, and Messrs. Beckett and Thornelowe, of Lichfield, the builders.

Middletown.—A new church, dedicated to All Saints, was consecrated at Middletown on Whitsun-Tuesday. The style is Early English; the plan a double rectangle, with nave, chancel, organ chamber, vestry, porch, and bell turret. The architect is Mr. E. M. Goodwin, Carmarthen; builders, Messrs. Davies, Welshpool. The inside arches are of blue brick, as is also the recess, forming at once both a credence table and piscina. The altar cross, forming the centre of a plain reredos, is inlaid with serpentine.

North Cray.—At North Cray the chancel of the church has been rebuilt. The walls are Kentish Rag stone, with Bath stone dressings. The floor is laid with Minton's tiles. On the south side of the chancel an organ chamber has been built. In the old chancel roof some curiously-carved wood bosses were found. The architect was Mr. E. Nash, Messrs. Wright, Brothers, & Goodchild the contractors, and the cost a little more than £1,000.

Oldham.—On Monday the Bishop of Manchester consecrated a new church at Shaw, near Oldham, to be called Holy Trinity Church. The building, which has been erected at a cost of £9,000, consists of a nave with three aisles, and chancel with two side aisles. The sittings, consisting of open benches, provide accommodation for 746 persons. The style of architecture is Early English, the roof being open-timbered.

Sheffield.—S. Mark's Church was consecrated and opened on Wednesday, 31st May, by the Archbishop of York. The nave is 96ft. long by 24ft. wide, with north and and south aisles, 14ft. 6in. wide; the transepts project 17ft. beyond the aisle walls, being of a width of 24ft. The chancel is 30ft. long by 24ft. wide, with organ chamber on the south side and vestry on the north side, with heating apparatus under. The tower and spire, which occupies a position in the south-west corner of the building, rises to a height of 160 feet. The style of architecture which has been adopted is Late Second Pointed, the windows being enriched with geometrical tracery and deeply-moulded mullions and jambs. The roof is lofty and open-timbered. The cost has been £11,000. The church will comfortably seat 900 adults. The architect is Mr. W. H. Crossland, F.R.I.B.A.

South Norwood.—Last week a church for the inmates of the South Norwood Nunnery and Orphanage, dedicated to the memory of the late Dr. Grant, first Roman Catholic Bishop of Southwark, was opened. It consists at present of a nave only, the building being in the Gothic style. The high altar is railed off at the east end, which has an apsidal termination, and is approached by five stone steps. Round the church are placed pictures illustrative of scriptural subjects, and on each side of the steps leading to the altar are two richly-coloured images representing the Madonna and Child and the patron saint of the church. It is intended at some future time, when the necessary funds have been collected, to add north and south transepts. The architects are Messrs. Goldie & Child.

Ventnor.—A new (Roman) Catholic Church has been consecrated at Ventnor. The style is Early English, from designs by Mr. T. C. Clarke, of London. It consists of nave and very handsome chancel, and is built of the local freestone. It is well lighted by a triple lancet window at the west end, and by five smaller ones on each side of the nave.

Waterbeach.—The church of S. John the Evangelist, Waterbeach, is completed, with the exception of the north aisle, which will require a further outlay of about £600. The leaden roof has been restored, and in several places new buttresses erected and the stone work of many of the windows restored. The church has been re-seated and the floors laid with red and black Staffordshire tiles in the nave and aisle and Minton's in the chancel. The architect is Mr. W. M. Fawcett, of Cambridge; the work has been superintended by Messrs. Doo & Ayton, of Bury, and performed by Mr. B. Tooley, of Bury S. Edmunds. The cost is about £900.

BUILDINGS.

Liverpool.—Extensive saw mills have lately been completed for the British Timber Company (Limited). The varied arrangements are well considered and appropriate to all requirements, having in use the latest improved machinery (estimated expenditure £40,000). The site of works is opposite the North Carriers' Dock, Bootle. Ground area, 2 acres; 8 millions of bricks used in construction; the masonry, carpentry, iron work in girders, columns, roofing, and fire-proof construction being also of a heavy and substantial character (style of architecture Italian). The general plans and working details have been prepared by Mr. W. H. Stead, architect and surveyor, and the contracts carried out by Messrs. Burroughs and Sons, contractors, Liverpool. The buildings erected comprise general offices, with a frontage of 138ft. by 45ft. deep, having a bold entrance stone archway, and dentil cornice, supported upon strong ornamental iron pillars—having over the centre "Britannia" well executed in bas-relief. Mill proper, 160ft. by 63ft., with engine-house, boiler-house, and chimney; extensive warehouses, hoists, and bending department, 164ft. by 32ft., including workmen's dining hall, and gate lodges, and for the effectual working of the premises four lines of overhead steam-travelling cranes are erected. Fire-proof construction is designed throughout, and due regard paid to proper ventilation. These premises are not only adapted as saw mills, but also for the manufacture of clog soles, bent timber, wood turning, &c., and since their completion an additional improvement is added to the young and thriving borough of Bootle, inasmuch as extra employment is given to 400 hands.

Knaresbro'.—The foundation-stone of a new hall for the Odd-Fellows' Society at Knaresbro' was laid on Monday week. The entire cost of the hall is £625. The contractors are—Mason, W. Rollinson; joiner, Lot Brayshaw; slater, J. Baynes; plumber, Charles Benson; painter, G. Tate. Architect, Thos. Wilson; consulting architect, Joseph Benson; clerk of works, G. Wilson.

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A deputation from several of the scientific societies of London, headed by Mr. W. Newmarch, F.R.S., had an interview with the Chancellor of the Exchequer in Downing-street on Monday for the purpose of submitting a proposal for erecting a building on or near to the Thames Embankment.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—C. N., H. L., P. A., J. H. T., E. W., D. R. S. S., J. A. C., E. P. M., C. B. A., G. T. R., J. P. S., J. H. E. W. G., H. & A. P. F., W. O. C.. W. J. S., N. & M., W. H. S., C. L. E., J. L., J. P., jun., W. F. C.

H. Harding.—The objects represented in the spandrel are a portcullis and chains.

J. A. Cossins.—Letter and photo to hand.

P. Auld.—The drawing of title-page to hand. We shall use it.

The Sketch-Book.—We have received several inquiries after the "Sketch-book." We can only say that it is not our fault that it has not been in the hands of contributors long since. Messrs. Whiteman & Bass have taken four times longer to print the plates than we expected.

W. T. H.—It is not an easy thing to give the best selected design by the side of the best rejected design. We wish we could do it oftener.

Correspondence.

THE ECHO IN THE ALBERT HALL.

To the Editor of the Building News.

Sir,—The complaint has frequently appeared in the public prints of an echo or confusion of sounds, which is not heard by all the audience at the same time, or in all parts of the Hall, because it is not the ordinary echo that takes place in all empty chambers, but is a necessary result of the elliptical form, in combination with the false position of the singers or speakers. The platform has, unfortunately, been placed at the end of the longer axis, and when the singer advances as usual to the front, he places himself in the immediate vicinity of one of the foci, the consequence being that his voice is reverberated to, and concentrated in the other focus, where it will be heard with increased loudness, but with some little confusion, because the waves of sound do not travel with instantaneous rapidity. The evil, however, does not stop here, for the concentrated voice at the second focus is again reverberated back to the first, and acts as a second feeble voice repeated after the original, because the sound-wave has to travel double the distance. This most distressing effect both to singers and audience would have been entirely prevented if the platform had been placed at the end of the shorter axis of the ellipse, because in that case the singer would be near the middle between the two foci, and no unpleasant reverberation could have been heard in any part of the Hall. This alteration must eventually take place, and the organ removed elsewhere, before this beautiful and costly structure can be made use of for general purposes.

At present the Albert Hall is nothing more than a bad concert-room, quite unsuited for International Exhibitions or scientific lectures of any description. The picture gallery is a mistake, for works of art can only be seen to advantage in suites of large rooms, properly arranged for the different departments. Moreover, the Hall, evidently intended to be a paying concern, can never be made thoroughly remunerative until the platform shall be constructed on the plan of the stages of our large theatres, with all the appliances for dramatic purposes, as well as for scientific lectures on the largest scale.

The series of misfortunes which have attended this noble building from its first conception would require far too much space to describe in detail, and therefore I can only enumerate a few of the most prominent. The plot of ground selected was quite unsuitable for the intended purpose, and is, moreover, only leasehold, for a grand public building erected entirely at the cost of the people! The building is erected entirely two stories below the natural level of the ground, and in consequence the arena cannot be properly ventilated. It is elliptical in form, but for some unaccountable reason it is not a true ellipse, but is compounded instead of various arcs of circles of different radii, and consequently gives the spectator the idea of its having gone out of shape. The structure is overtopped by the surrounding buildings, cannot be seen from any favourable point of view, and, from its squat appearance, well deserves the appellation given to it by the vulgar, of the "band-box."—I am, &c., C. E.

"SHOULD PERSPECTIVE VIEWS BE EXCLUDED FROM COMPETITIONS?"

Sir,—The above interesting and important question was raised at the late meeting of the Architectural Congress, but, with other matters, could not be fully considered from want of time. I beg, Sir, now to say a few words on the subject. Competitors are verily guilty in two grave particulars—canvassing committees and trickiness in their drawings, particularly the perspectives—so that able but honest men are kept out of the lists. Committees assume that geometrical drawings convey erroneous ideas. and that it is no use to try to understand them, whilst perspective views are readily to be comprehended, and must be true; consequently that perspectives are necessary in competitions. Such ideas are incorrect. Nothing could be more unfortunate than the dependence placed on perspective representations; such things are universally falsified. The point of sight is usually an inaccessible one, the horizontal line put high or low to suit the peculiarities of the design, without any reference to its possible position, and if parts of the building come out too prominently or not sufficiently so, they are "cooked"—that is, made to be, as is thought, most favourable for the view. This masquerading of truth goes by different names, "cooking," "fudging," "jiggering;" but the one right term for it is *lying*.

To show what competition perspectives are: One man I know, given to competitions, will make his perspective before his other drawings! Filching freely from books or prints such picturesque and attractive features as strike his fancy, he casts them together and makes an ideal view without any reference to rules. This "happy-go-lucky" plan saves immense trouble, whilst insuring the effect he wants; his idea of excellence.

Of course such design in the geometrical drawings must be made to work in as best it can. If this gentleman does condescend to erect his perspective by rule, it is only so far as regards the leading lines; the details are filled in by eye, thus securing their advantageous disposition and saving time. And in such things do committees put their trust! Instead of perspective views being absolutely necessary in competitions, as is usually considered, I say they ought not to be admitted at all. Moreover, the one perspective, in time, trouble, and expense, probably costs as much as all the other drawings put together, and, but for the necessity of this view, more time and study would be given to the thorough preparation of the design, and the achieving of greater excellence. For this reason also, I say, perspectives should be excluded. And even if the linear perspective is tolerably correct, only slightly "fudged" (that it will be to some extent is pretty certain) there is yet to be considered the agency of that professional falsifier—the pictorial artist. The artist, if he be an artist, creates a subject of interest out of the meanest materials—a pretty picture of even a pigstye. And when his flattering and illusive aid is evoked for the perfecting of the competition perspective, his success is but too frequently the success of the competitor. The magic of colour, cunning arrangement of light and shade, well-placed accidental shadows, charming groups of figures, and appropriate, but apocryphal, landscape, entirely divert attention from the faults of the design. People are pleased with the delusive effect, and take no account of, even if they suspect, the artifice by which their suffrages are obtained. So potent is the power of well-applied colour, it disarms even the criticism of architects.

So, again, I say, perspective views should be excluded from compositions. In abolishing perspectives, one of the two great evils of competitions would be well rid of. The other is, I fear, beyond control. If gentlemen will not be gentlemen, what remedy is there possible? The mean, dishonourable practice of canvassing committees is simply disgraceful, but is well-nigh universally done. And in the world's eye, if a man does a mean thing, success gilds the act. Passing as sharp practice, it is regarded rather as a proof of cleverness and tact, and too generally such success succeeds.

For my part, as—

The times in race
True worth has place,
Are sadly few indeed;
I'd praise the man
Who fairly ran,
And honest—not succeed.

If truth be sure
In ethics pure,
It doubtless is more meet,
And better far,
We cheated are,
Then others learn to cheat!

I am, &c., P E M.

POOR HOUSE BUILDING.

Sir,—May I call your attention to a speech of Lord Derby's on the subject of Poor House Building? There are in it some suggestions which have been taken almost word for word from the Building News. My article on it, you will remember, contained a suggestion for the improvement of such houses by the simple process of repairing those that now exist, and it was the first time, I believe, that the suggestion was ever made publicly. Lord Derby has taken the whole idea, and made it his own without the slightest acknowledgment of the source from which he got it, viz.—the Building News of two or three weeks back. This is rather ungenerous.—I am, &c., C. Bruce Allen.

AN OPINION FROM GLASGOW.

Sir,—Not being an engraver, nor having any intention to use your fine reproduction of this first-class specimen of Albert Dürer's style as a "model," I am sorry to have to express my great disappointment at the way in which the artist has treated his subject. Many of the details may be good, and the manipulation unsurpassed, yet, as a whole, the design is sadly wanting in grandeur. It has not the necessary *soul* in it. It seems to me to be more the production of an artist-workman than the work of an artist-poet. "C. B. A.," at page 425, seems to be something of the same opinion, at least, judging from "This is not the vision of the Apocalypse as seen by a Jew," &c. The craft of the workman in manipulating detail can never make up for the want of the noble genius of the poet in creating design. Consequently, it ought to be the grand aim of all art students to make their design *as a whole* worthy of the subject which is their theme. There is ample room for some of your readers to produce an "Apocalypse" which would throw that of Albert Dürer into the shade. Pictus.

Intercommunication.

QUESTIONS.

[2236.]—**Architects and their Clients.**—Is it usual for architects to have their drawings submitted to other architects by their clients?—J. R. V.

[2237.]—**Construction of Floor.**—I shall be glad to learn, through the medium of your most valuable "Intercommunication," the experience of some subscriber as to the best means of constructing a floor with a clear span from wall to wall of from 25ft. to 27ft. The room will be about 100ft. long, and used for school or similar purpose of assembly. There is, I am aware, the wood beam with iron flitch, the rolled girder, the cast iron girder, and the box girder. Cost is a consideration, yet stability is indispensable. The scantlings or sections of these or any other form recommended would be acceptable.—A Subscriber.

[2238.]—**Brick Making and Burning.**—Would some of my brother readers be kind enough to give me the following information on burning bricks? (1) Whether it is better to mould with sand or water, and what should be the difference of cost? (2) Whether "clamp" or "open kilns" are more certain for producing a good article, and what difference should there be for coals at 6d. per cwt.? (3) Is it possible to burn sufficiently in a clamp kiln large bricks for quoins, &c.?—say 12″ × 6″ × 6″? (4) What would be a fair price per 1,000 to give (the clay being cast) for making and burning, labourers' wages being about 18s. per week?—Rusticus.

REPLIES.

[2208.]—**Rain-water Tanks.**—The hardness of the water, after remaining some time in the tank, is due to the absorption of the lime in the cement. A pint of water at 60° Fahr. will take up eleven grains of lime, and, what is very remarkable, the colder the water the more it will hold in solution. It is probable that the cement is not of a good quality. For all purposes of this kind, Roman cement has given way to Portland. In fact, the former is rapidly becoming obsolete, except in cases where people are foolish enough to prefer a bad to a good material simply because it is a little cheaper. The remedy I should employ would be to pay the inside of the tank over with a good strong coating of tar. Rain water is kept quite pure and soft, in country districts, in large water-butts, which are well coated with tar inside and outside.—Acer.

[2214.]—**Practical Construction.**—There are three books which will give all the information "Aspirant" requires: Barlow's "Strength of Materials," Hodgkinson on "Cast Iron," and Shields on "Strains upon Ironwork." Mr. Tarn has lately published a volume which is well adapted for the use of those who desire to learn the theory of building and construction.—C. M.

[2216.]—**Duties of Land Agent.**—"Surveyor" will not find a "cheap" book on the subject he wishes to become thoroughly acquainted with. The best treatise, to our knowledge, is "Text Book for Architects, Engineers, Surveyors, Land Agents, Country Gentlemen, &c.," by Edward Ryde. Every detail of the valuation of property, and the qualifications and duties of agents, stewards, and other landed estate officials fully gone into. The price of the work is 28s.—Rusticus.

[2223.]—**Clock Tower.**—The general rule of calculating the size of a clock dial is one foot to every ten from the ground.—A. F. B.

[2234.]—**Mounting Tracings.**—Stiff paste.—F.

[2235.]—**Taking Out Quantities.**—Take no notice of the matter.—F.

Our Office Table.

A New Street.—There is, it seems, a chance that the long-talked-of street from Tottenham Court-road to the Strand through Leicester-square will be made. The Metropolitan Board of Works are prepared to accept the pecuniary assistance offered by the Enston and Charing-cross Railway Company. For this we are thankful London has only been waiting about thirty years for the "improvement," and it may well count itself happy in having its little wants in respect to the disreputable refugee district attended to so very soon! But there is a more astonishing scandal even than Leicester-square, which is the marvel of foreigners, but strangely overlooked by the people of London. Covent-garden is both the most famous and objectionable market in the country. The amount of business done under and around the wretched conglomeration of sheds called a market-house, is fabulous, yet anything more offensive to the eye, or generally inconvenient, than the huge hovel itself is not to be found in a moderately respectable neighbourhood. A good market-house would be a boon, and now that the fashion of shopping at Covent-garden Market in person is beginning to be established, and the place is crowded with carriages in the afternoon, it would be a public boon to make it decent for visitors and commodious for the trade.

Surely a Hoax.—The Chief Commissioner of Works has it in contemplation, the *Morning Post* understands, to add another attractive feature to the metropolis, by displaying the lime light on the great clock tower at the New Palace of Westminster so long as the House of Commons is sitting. The light will be visible from every portion of the town, and when it is extinguished it will be known far and near that the labours of the Legislature are suspended. The arrangements for displaying the light will be under the direction of Dr. Percy and Professor Tyndall.

The Ruins in Paris.—There is already, says the special correspondent of the *Times*, a discussion as to what to do with the ruins—which shall be rebuilt, which pulled down, and which left standing. One proposal, which finds favour, is to pull down all that remains of the Tuileries, and so open up the Louvre to the Champs Elysées without a break in the vista, laying out the space now being occupied by the Palace in a public garden. The universal sentiment is to inclose the Hôtel de Ville in a square, and let it stand a magnificent ruin and illustration of the manner in which the most advanced philosophic and philanthropic ideas of the present age find their highest expression and ultimate development. The Ministère des Finances and most of the buildings on the Quai d'Orsay will probably have to be rebuilt, and will afford employment for some time to large numbers of workmen belonging to the International, who can always burn them down when they are again in need of work.

Preparation for Obtaining Decorative Colours on Metals.—Dr. Pnscher employs for this purpose a solution of hyposulphite of lead in hyposulphite of soda, the latter in the proportion of 3 parts, by weight, of dry salt to 1 part of the acetate of lead, the quantity of water used for making the solution being about sixteen times the weight of the first-named salt. The clear solution of the salts deposits, when heated to about 1000, a thin layer of sulphuret of lead upon any metal—brass, zinc, copper—placed in the solution, and thereby produces a beautiful display of various colours on these objects.

The Water-Gate at the End of Buckingham-street, Strand.—The water-gate at the end of Buckingham-street, in the Strand, erected by George Villiers, the first Duke of Buckingham, for access to his mansion, York House, as many of our readers know, yet remains; but it is now sunk below the level of the adjoining ground at the back of, perhaps, London's greatest work, the Thames Embankment. This gate (said Mr. I'Anson, in the course of a paper read before the Institution of Surveyors, an abstract of which will be found on p. 456 of the present number), erroneously attributed to Inigo Jones, was designed and built by Nicholas Stone, sen., master mason to King James I. and King Charles. At that time, river stairs were numerous.

A Lost Church Found.—The oratory of S. Gothian, near Hayle, Cornwall, is the second instance of a church which had been buried in the sands for centuries being brought to light once more. S. Gothian, from the rudeness of the work, appears to be of a still more ancient date than the church of S. Pyran, which was found a few years ago at Perranzabuloe, or "Perran-in-the-Sands." The public have almost succeeded in carrying off the whole of S. Pyran's structure piecemeal, the bones of the dead not escaping the hands of energetic collectors; and to prevent the same fate befalling S. Gothian, the Rev. F. Hockin, rector of Phillack, has taken the matter in hand, and, with the assistance of several gentlemen of the neighbourhood, is taking means for the preservation of this valuable relic of ancient British architecture

Old City Mansion in Mark-lane.—Mr. Edward I'Anson, in the course of a paper lately read by him before the Institution of Surveyors, referred to the altered aspects of the City since 1815, when, and for many years subsequently, the merchants of the City used to live over their counting-houses. Most of the buildings then existing have now been altogether demolished or entirely altered to adapt them to modern requirements. One of the finest of these old City mansions (said Mr. I'Ausou), which is now being not quite destroyed, but converted, is situate in Mark-lane, and belonged to the Baring family. Although long disused as a residence, it has existed till this day with all its essential features unchanged. With its carved oaken portal, its marble-paved hall, its balustraded staircase, panelled walls, and its garden with a fountain in the centre, and its fig-trees, which, or until a few days since, still remained, it is a perfect type of the residence of a merchant of the last century. All these interesting features, however, will soon be entirely obliterated, and the house and garden converted into strictly business offices.

Chips.

The site of the Fleet Prison has been selected by the Congregationalists for the spacious hall and public buildings about to be erected by them for the purposes of their denomination.

The foundation-stone of a new school building—style Gothic, estimated cost, *vide* local paper, £4,000.—for the parish of St. George's, Hulme, Manchester, was laid on Wednesday in Whitsun week by the Bishop of Manchester.

On Saturday (to-morrow) a visit will be made by the members of the Architectural Association, to the new Church of S. Augustine, now being erected in the Queen's Gate-road, South Kensington.

Early on Thursday week, a fire broke out on the premises of Patmau and Fotheringham, timber merchants, Theobald's-road, Holborn. The timber-yard is situated in the centre of a block of houses, and the damage done to them was very considerable, some fifteen being reduced to an almost uninhabitable condition from the effects of the heat and the streams of water, and hardly one escaped without some injury.

Engineers have already commenced a survey of the ground for the proposed fortresses in the interior of Paris. Two of them will probably be erected on Montmartre and the Buttes de Cbaumont.

The foundation-stone of a memorial church to the Rev. George Whitfield was laid on Monday, at Gloucester.

In Great Tower-street (No. 43), near Water-lane, is the house formerly belonging to Alderman Beckford; it is in good preservation, and is now let out as offices.

According to an estimate in the *Vérité*, the recent destruction of property in Paris, including houses, furniture, securities, works of art, &c., is valued at eight hundred millions of francs.

Her Majesty has fixed the 21st inst. for the opening of the new S. Thomas's Hospital.

The Bishop of London has fixed Friday, July 7, for the consecration of Christ Church, Victoria-park-road.

On Tuesday week, the Hon. F. A. Stanley, M.P., laid the foundation-stone of a new school at Pilling, near Fleetwood.

Advices from Ottawa state that fires are raging in a forest in the vicinity of that city.

The *New York Engineering and Mining Journal* gives the production of iron ore in the Lake Superior district in 1870 as 856,471 tons, the pig iron made being 47,848 tons.

Professor Tyndall will this (Friday) evening, give a discourse (with experiments) on Dust and Smoke, at the Royal Institution, Albemarle-street.

Mr. Stansfeld, the President of the Poor Law Board, laid the foundation-stone of a new Unitarian Chapel at Halifax, on Monday week.

The gold Albert Medal of the Society of Arts, instituted to reward distinguished merit in promoting arts, manufactures, or commerce, has this session been unanimously awarded by the Council to Mr. Henry Cole, C.B.

The death is announced of the well-known archæologist, M. Gaetano de Minicis.

Mr. Poynter, A.R.A., has been elected Slade Professor of Fine Art in University College, London.

Herr Albert Gliemann, a well-known portrait painter, of Dresden, died on the 25th ult.

Timber Trade Review.

Prices, June 6.—Timber per load of 50 cubic feet:—Riga, £3 5s. to £3 7s.; Dantzig and Memel crown, £4 to £4 10s.; ditto best middling, £3 5s. to £3 15s.; ditto common middling, £2 10s. to £2 14s.; ditto undersized, £2 10s. to £2 15s.; ditto small, short, and irregular, £2 to £2 10s.; Stettin, £2 10s. to £2 15s.: Swedish, £2 10s. to £2 15s.; ditto small dimensions, £2 5s. to £2 8s.: Memel crown oak, £5 10s. to £6 10s.; African oak, £7 to £8; Cuba sabien, £8 to £9; Australian ironbark, £6 to £6 10s.; Quebec large yellow pine, £4 5s. to £5; S. John's and board pine, £3 15s. to £4; ditto building sizes, £3 5s. to £3 15s.; Quebec oak, £6 to £6 5s.; ditto ash, £3 10s. to £4 5s.; New Zealand masts, £6 to £7 10s.

Deals per S. Petersburg standard:—Quebec pine, first floated, £16 10s. to £18; ditto second, £12 10s. to £13; first bright, £18 to £19 10s.; ditto seconds, £13 5s. to £14; ditto thirds, £8 15s. to £9 10s.; Archangel best yellow, £12 10s. to £14 10s.; ditto second yellow, £9 10s. to £10 10s.; Finland and hand-sawn Swedish, £7 5s. to £8; Petersburg and Riga white deals, £8 10s. to £9 5s.; Christiana deals, best sorts, yellow and white, £10 to £12 10s.; Norway deals (other sorts) £7 to £9; ditto batteus (all sorts) £5 5s. to £7; New Brunswick mixed pine, £7 to £8; Quebec first spruce, £9 to £11; ditto seconds, £7 10s. to £8 5s.; S. John's spruce, first quality, £8 10s. to £9; ditto seconds, £8 to £8 5s.; ditto thirds, £7 10s. to £7 15s.; ditto unassorted, £8 to £9 5s.; Nova Scotia and Prince Edward's Island, £7 5s. to £7 15s.; spruce battens, £7 to £7 10s.; pitch pine planks, £12 10s. to £13.

Lathwood per cubic fathom:—Petersburg, £5 5s. to £5 15s.; Riga, Dantzig, Memel, and Swedish, £3 to £5.

Trade News.

WAGES MOVEMENT.

The Strike of Brass Casters in Wolverhampton.—Last week, the cabinet lock brass casters of Wolverhampton, who are now on strike, met in that town, and determined to continue their movement for an advance of 25 per cent. in their wages—namely, from 1d. per pound to 1¼d. per pound, and not to return to work upon any other terms; at the same time they expressed their readiness to meet their masters if the latter were prepared to negotiate. They urged that in the past ten years their wages had been decreased to the extent of 10s. a week by reason of the alterations that had taken place in their patterns; and that now that the means of living were so high, and the operations of the Factories and Workshops Acts increased the expenses of the men who had children, they could not any longer continue to work at the present scale.

Rotherham.—The strike of house painters at Rotherham is at an end, the men having accepted for the present the master's offer of an advance of ¼d. per hour. The original demand of the operatives was an increase of ¾d. per hour.

Lincoln.—The stonemasons and bricklayers of Lincoln on Friday week struck, the masters having refused to accede to their demand for an increase of 1s. per week in the rate of wages, and the reduction by two and a half of the hours of labour on Saturday.

Introduction of Belgian Joiners into Newcastle.—The master house joiners of Newcastle and Gateshead have resolved to bring workmen from Belgium to fill the places of the men on strike. The first instalment, of twelve men, arrived on Monday per steamer from Antwerp. It is said others will follow during the next few days. Joiners in Belgium only receive 2½d. per hour; here they will get 5½d. The feeling is so great, however, and threats to expel foreign blacklegs so frequent, that serious disturbances are feared. The strike of the engineers still continues.

TENDERS.

Bucks.—For alterations and additions to Gunpowder House, Marlow-road, for H. Rose, Esq. Mr. Arthur Vernon, architect:—

Loosley	£950	0	0
Corby	810	0	0
Sexton	774	0	0
Child	759	4	0
Reavell	750	0	0
Almond	660	0	0
Woodbridge	649	0	0
Cooper	628	0	0
Banghurst (accepted)	553	0	0

City.—For re-building Nos. 68 and 70, Ludgate-hill, for Robert Pettit, Esq. Mr. J. R. Meakin, architect. Quantities by Mr. Matthews:—

Greenwood & Sons	£3305
Foster	3295
Dove, Bros.	3170
Colls & Sons	2976

Browne & Robinson	2932
Conder	2835
Capps & Ritso	2729
Elkington	2569

Derbyshire.—For the erection of house at Borrowash, for H. R. Towle, Esq. Mr. Jno. Collyer, architect, &c., Market-place, Nottingham:—

Curtis (accepted)	£2298

Hammersmith.—For reinstatement after fire at the Oil Mills. Mr. G. H. Simmonds, architect:—

Williams, Bros.	£1480
Chamberlain, Bros.	1259
Grover	1160
Wicks & Bangs	1095
Jacobs	1070
Adamson	1050
Morter	847

Middlesex.—For the erection of villa residence, Brentford-road, for W. C. Smith, Esq. Mr. Alfred C. Bean, architect:—

Wigmore	£1597	10	0
Gilding	1485	0	0
Marsh	1480	0	0
Rose (accepted)	1392	0	0

Nottingham.—For the erection of a pair of villas, Chestnut-grove, for Mr. W. H. Farmer. Mr. Jno. Collyer, architect, &c.:—

Bell & Son	£991	10	0
Wool & Slight	987	0	0
Synam	979	0	0
Vickers	973	0	0
Curtis	945	0	0
Jelley (accepted)	930	0	0

Nottingham.—For the erection of house, Mapperley-road, for Mr. A. Brownsword. Mr. Jno. Collyer, architect, &c.:—

Curtis	£1046
Slim	1023
Shepperson	1020
Vickers	1010
Synham	1006
Jelley (accepted)	993

Nottingham.—For the erection of house, Sherwood-rise, for Mr. W. G. E. King. Mr. Jno. Collyer, architect, &c.:—

Curtis (accepted)	£531	10	0

Nottingham.—For the erection of houses, All Saints' street, for D. New, Esq. Mr. Jno. Collyer, architect, &c:—

Hall	£1530	0	0
Dennett & Co.	1519	0	0
Wright & Son	1335	0	0
Jelley	1323	0	0
Ellis (accepted)	1319	15	0

Nottingham.—For extension to house, Forest-grove, for Mr. Wm. Smith. Mr. Jno. Collyer, architect, &c.:—

Jelley (accepted)	£440

Nottingham.—For the erection of houses, Colville-street, for Mr. W. H. Farmer. Mr. Jno. Collyer, architect, &c.:—

Jelley	£3118
Bell & Son	3014
Synam	3005
Vickers	2972
Shepperson	2949
Curtis (accepted)	2940

Tooting.—For the erection of a new brewery, Lower Tooting, for Messrs. Charles & James Atlee. Mr. Arthur Kinder, architect and engineer, 92, Cannon-street:—

Rudkin	£2325
Loat	2203
Williams & Sons	2177
Deacon	2090
Foss & Blackshaw	1889
Norris	1858
Kelley, Bros.	1853
Moultrie	1830

◆

Statue of Sir Walter Scott for New York.—The Scottish societies of New York having recently resolved to place a statue of Sir Walter Scott in the Central Park of that city, they have arranged with Mr. John Steel, R.S.A., of Edinburgh, for a copy in bronze of the well-known marble figure in the Scott Monument, Princes-street. The statue will, it is expected, occupy an important site in the beautiful park at New York, and will be placed on a pedestal of Peterhead granite, designed by the sculptor, and sent out from this country. Mr. Steel has engaged to supply the statue in the course of a year from this date, and the foundation-stone of the pedestal is intended to be laid with great ceremony on the 15th of August next.

A Small-pox Hospital Not a Nuisance in the Eye of the Law.—A point of some importance to the owners of land or houses in the neighbourhood of small-pox hospitals has lately been raised in the Court of Chancery. The Metropolitan Asylums Board had purchased a piece of ground at Kensington, on which they proposed to erect a small-pox hospital for the reception of the sick poor. The owners of the adjoining property declined to permit a road to be made to the building, on the ground that the institution would be a nuisance and an injury, and demurred to a bill which had been filed to compel them to do so. Vice-Chancellor Wickens overruled the demurrer, observing that a small-pox hospital had been already decided not to be a nuisance.

Small-pox, Fevers, and Skin Diseases.—The predisposition to is prevented by Lamplough's Pyretic Saline. Agreeable, vitalising, and invigorating, its effects are remarkable in their cure and prevention. Take it as directed. Sold by chemists and the maker, H. Lamplough, 113, Holborn-hill.—[Advertisement.]

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Lancashire and Yorkshire Railway, June 13.—For the painting required at several of their stations. William S. Lawn, Secretary, Manchester.

Fulham Union, June 15.—For the erection of certain buildings and alterations in connection with the infirmary and union workhouse. T. Aplin Marsh, clerk to the guardians. Clerk's offices, Fulham union workhouse, Hammersmith.

Greenwich Public Baths and Wash-houses, June 14.—For manufacturing and erecting pumping machinery, for the purpose of supplying water to the above. Peter Soames, A.K.C., C.E., consulting engineer to the Board, 10, Southampton-street, Strand, W.C.

Hartshill, June 15.—For the erection of nine new cottages, at Chapel End. Mr. W. G. Farmer, Castle-street, Hinckley.

Heanor Local Board of Health, June 26.—For all or any of the undermentioned works. Laying down 140 yards or thereabouts of 9-in. sanitary pipes, &c. Laying down about 170 yards of similar piping, &c. Laying down about 422 yards of 12in. sanitary pipes, &c. The kerbing and formation of a footpath, about 208 yards in length; the taking up and re-laying culvert, about 12 yards, and building a new cinder wall, about 50 yards in length. The materials will be supplied on the ground by the Board. R. B. Spencer, clerk, Public Offices, Basford.

Ascot Heath, June 17.—For additions and alterations proposed to be done at the Royal Hotel, Ascot Heath. Clark and Holland, architects, Newmarket, Cambs.

Barton, June 24.—For levelling, paving, sewering, and channelling Timothy-street, Eccles, within the district. George Trenbath, clerk, Boardroom, Patricroft.

Bridewell Hospital, July 1.—For eighty years by public tender, the site of Radley's Hotel and two houses, No. 12 and 13, adjoining, in New Bridge-street. A. M. Jeafferson, at the Clerk's Office, Bridewell Hospital.

Warrington Water Works Company, June 24.—For the completion and covering over of a reservoir, situate near the village of Winwick, near Newton-le-Willows. James Riley, secretary, Water Works Office, Warrington.

Leeds, June 21.—For the erection of new co-operative store, at Pudsey, for the Leeds Industrial Co-operative Society, Limited. Wilson & Bailey, architects, Central Market Buildings, Leeds.

Leeds, June 14.—For rebuilding the Pack Horse Inn, Woodhouse Moor, and for the erection of three shops and houses adjoining. Wilson & Bailey, architects, Central Market Buildings, Leeds.

Merthyr Tydfil Union, June 23.—Aberdare Hospital.—For the erection of the above hospital, near Mill-street, Aberdare. Frank James, clerk, 184, High-street, Merthyr.

Manchester Corporation Gasworks, June 14.—For the supply of the following stores for year ending the 24th June, 1872, namely:—Wrought iron tubes and fittings; oils, tallow, &c.; bars, rod, and sheet iron; timber; meter boxes; tarred and spun yarns; stationery. Joseph Hobson, town clerk, Gas Offices.

Kent.—Maidstone Prisons, June 13.—For alterations to two buildings at the County Prisons, Maidstone. F. Russell, clerk of the peace, Maidstone.

Devizes, June 13.—For the restoration of Potterne Church, near Devizes, in the county of Wilts. Architect, Mr. Christian, 8a, Whitehall-place, London.

Crickhowell, June 18.—For the erection and completion of the new workhouse at Llangattock, Crickhowell. Mr. W. P. James, Royal Arcade, Cardiff.

House of Correction, Coldbath-fields, June 23.—For sundry works in the alteration of some of the prison buildings. John S. Skaife, clerk to the Visiting Justices.

◆

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OF BEST QUALITY.

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LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

Lead.

		£	s	d	£	s	d
Pig—Foreign	per ton	£17	17	6	£18	0	0
„ English W.B.	do	19	15	0	20	0	0
„ Lead Co.	do	18	15	0	19	0	0
„ Other brands	do	18	5	0	18	10	0
Sheet Milled	do	18	15	0	19	0	0
Shot, Patent	do	20	10	0	21	0	0
Red or minium	do	20	10	0	0	0	0
Litharge, W.B.	do	0	0	0	0	0	0
White Dry.	do	25	6	0	26	0	0
„ ground in oil	do	0	0	0	0	0	0

Copper.

British—Cake & Ingot	per ton	71	10	0	72	0	0
Best Selected	do	73	10	0	74	0	0
Sheet	do	74	0	0	77	0	0
Bottoms	do	79	0	0	0	0	0
Australian	do	72	0	0	75	0	0
Spanish Cake	do	0	0	0	0	0	0
Chili Bars, cash	do	64	15	0	66	0	0
„ Refined ingot	do	70	0	0	72	0	0
Yellow Metal	per lb.	0	0	6⅝	0	0	7¼

Iron.

Pig in Scotland, cash	per ton	2	17	0	0	0	0
Welsh Bar, in London	do	7	5	0	7	10	0
„ Wales	do	6	12	6	6	15	0
Staffordshire	do	7	15	0	8	5	0
Rail, in Wales	do	6	15	0	7	0	0
Sheets, single in London	do	9	5	0	10	5	0
Hoops, first quality	do	8	15	0	9	5	0
Nail Rod	do	7	10	0	7	15	0
Swedish	do	9	15	0	10	0	0

Timber.

Teak	load	12	5	0	13	10	0
Quebec, red pine	„	3	15	0	4	15	0
„ yellow pine	„	4	5	0	5	5	0
Quebec oak, white	„	6	0	0	6	5	0
„ birch	„	3	10	0	4	10	0
„ elm	„	4	0	0	4	10	0
Dantzic oak	„	4	10	0	6	10	0
„ fir	„	2	7	0	4	0	0
Memel fir	„	2	10	0	3	10	0
Riga	„	3	5	0	3	10	0
Swedish	„	2	5	0	2	10	0
Masts, Quebec red pine	„	4	0	0	6	10	0
„ yellow pine	„	4	0	0	6	10	0
Oregon	„	7	0	0	9	0	0
Lathwood, Dantzic, fm.	„	3	0	0	5	0	0
„ St. Petersburg	„	5	5	0	5	15	0
Deals, per C., 12ft. by 3 by 9in.,							
Quebec, white spruce	„	12	10	0	18	0	0
St. John, white spruce	„	12	10	0	14	10	0
Yellow pine, pr reduced C							
Canada, 1st quality	„	18	0	0	19	10	0
„ 2nd do	„	13	5	0	14	0	0
Archangel, yellow	„	12	10	0	14	10	0
St. Petersburg, yellow	„	13	0	0	13	10	0
Finland	„	7	0	0	8	0	0
Memel and Dantzic	„	0	0	0	0	0	0
Gothenburg, yellow	„	8	10	0	10	10	0
„ white	„	8	10	0	9	10	0
Gefle, yellow	„	10	10	0	12	10	0
Soderham	„	8	10	0	12	0	0
Christiania, per C., 12ft. by 3 by 9in., yellow	„	10	0	0	12	10	0
Other Norway	„	7	0	0	8	0	0
Flooring boards, pr square of 1in., first yellow	„	0	9	0	0	10	0
First white	„	0	8	0	0	9	0
Second qualities	„	0	6	0	0	8	0

Oils, &c.

Seal, pale	per tun	37	0	0	0	0	0
Sperm body	„	82	0	0	0	0	0
Cod	„	35	10	0	0	0	0
Whale, South Sea, pale	„	34	0	0	0	0	0
Olive, Gallipoli	„	48	0	0	0	0	0
Cocoanut, Cochin, tun	„	50	0	0	0	0	0
Palm, fine	„	37	0	0	0	0	0
Linseed	„	32	15	0	0	0	0
Rapeseed, Eng pale	„	45	10	0	0	0	0
Cottonseed	„	27	0	0	31	10	0

BANKRUPTS.

TO SURRENDER IN LONDON.

Gibbs, Thomas, and Gibbs, Thomas, jun., New Church-road, Camberwell, builders, June 15, at 11.—Wild, Alfred, Providence-row, Shepherd's Bush, carpenter, June 16, at 12.

TO SURRENDER IN THE COUNTRY.

Richardson, Lot, jun., Shitlington, builder, June 27, at Bedford.—Fairhead, William, Tottenham, builder, June 22, at Edmonton.—Wrigley, Samuel, Oldham, builder, June 19, at Oldham.

PUBLIC EXAMINATIONS.

June 23, J. W. Drayton, Yeovil, plumber.—June 20, A. Williams, Warwick-road West, Paddington, builder.—June 16, W. D. Stevens, Hull, builder.—June 28, R. B. Barrett, Lowestoft, plumber.

DIVIDEND MEETINGS.

June 22, W. Elliott and T. Ilsey, Seward-street, Goswell-road, engineers and iron founders.—June 24, G. Green, S. Andrew's-road, Limehouse, engineer.—June 27, J. Royle, Wrangle, Lincolnshire, carpenter.—June 14, W. Johnson and J. Whitaker, Pennington, Lancashire, iron founders.

INSOLVENT DEBTOR'S DIVIDEND.

J. Storey, late of Upper Wortley, near Leeds, plumber, div. 6s. 10½d.

PARTNERSHIPS DISSOLVED.

Garside, Barnes, and Co., Stalybridge, stone masons.—Joberns and Arrowsmith, Aldridge, Staffordshire, brick and tile manufacturers, and timber dealers.—Brae and Inman, Greenwich, and elsewhere, civil engineers.—Isaacs and Lankford, Bristol, cement manufacturers.—Atkinson and Brown, Great Grimsby, slate merchants.—Jackman & Barker, Coventry, plumbers.—Payne and White, Manchester, builders.—W., J., and H. Potter, Horsham, builders.—Harrison and Wetton, Kerridge, Cheshire, stone merchants.—Price and Co., Adam-street, Adelphi, warming, ventilating, and hot water works.—Eckersley and Bayliss, London and elsewhere, railway contractors.

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This Company is prepared to entertain proposals for Tramways either in the United Kingdom or elsewhere, Address, with full particulars, to the Secretary (pro tem.). as above.

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This Company has been formed to carry out Tramway Enterprise in connection with the parties who have been mainly instrumental in the introduction of Tramways into this country and the principal cities on the Continent, and who will therefore bring to the business great practical experience.

The intention of the Company is generally to invest its own capital in the construction and development of the Tramways selected by it, and to dispose of the same from time to time when tested by the experience of actual working, in which way the public will be protected against unsound and merely speculative projects.

The Company is entirely free from any engagements, direct or indirect, with contractors, and will therefore carry out such works as it may undertake, on the best possible terms for cash.

The position of the founders of this Company will enable them to secure, on the most favourable terms, concessions from the principal cities on the Continent and elsewhere open to Tramway enterprise.

By order of the Board,
J. B. GLENN, Secretary (pro tem.).

REPARATION of S. ALBAN'S ABBEY. The extremely dangerous condition into which this venerable structure has fallen, having been pointed out in a report by the eminent architect, G. Gilbert Scott, Esq., R.A., a Committee has been formed for the purpose of obtaining SUBSCRIPTIONS towards the WORK of REPAIR, and carrying it into effect. The present list comprises the following names:—

The Earl of Verulam
The Earl Cowper, K.G.
The Earl Spencer
The Earl of Clarendon
The Bishop of Rochester
Lord Ebury
The Hon. Henry Cowper, M.P.
Sir John Sehright, Bart.
H. R. Brand, Esq., M.P.
R. Dimsdale, Esq., M.P.
Archdeacon Grant
The Marquis of Salisbury
The Earl of Essex
Viscount Malden
Lord Dacre
Lord Lytton
The Rev. Sir J. Hawkins, Bart.
Abel Smith, Esq., M.P.
W. H. Smith, Esq., M.P,
H. W. Eaton, Esq., M.P.
Robert Hanbury, Esq.
J. Evans, Esq., F.R.S., F.S.A.

and the principal gentry of the county of Herts.

Mr. Scott estimates that a sum of at least £46,000 will be required for the proper reparation of the Abbey, exclusive of any internal fittings or restorations.

With a view of obtaining the aid of the country generally in the preservation of one of our most important national and architectural monuments, a PUBLIC MEETING WILL BE HELD AT WILLIS'S ROOMS, ON THURSDAY, JUNE 22, AT TWELVE O'CLOCK, THE EARL OF VERULAM in the chair.

The Marquis of Salisbury
The Bishop of Winchester
Lord Ebury
Mr. Beresford Hope, M.P.
The Earl of Stanhope
The Bishop of Rochester
The Dean of Westminster
Mr. W. H. Smith, M.P.

and other noblemen and gentlemen are expected to speak,

The attendance of all favourable to the object of the meeting is earnestly invited.

Applications for tickets should be made at once to Henry J. Toulmin, Esq., The Pré, S. Alban's.

HENRY J. TOULMIN, } Hon.
W. J. LAWRANCE, M.A. } Secs.

S. Alban's, June, 1871.

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The CHARNWOOD GRANITE COMPANY are in a position to supply, either by rail or water, all kinds of paving setts, &c., broken Granite by land, of different sizes, for road-making, Gravel for walks, Granite in the rough for building and breaking purposes.

The Charnwood is, beyond doubt, one of the best Granites in the kingdom; the extraordinary strength of the above is testified by Mr. Kirkaldy, Testing and Experimenting Works, The Grove, Southwark-street, London, S.E.

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Loughborough, June 1, 1871.

CIRCULAR SAW BENCH.—WANTED, a good CIRCULAR SAW BENCH, to cut 3in. planks, and Rabbit Tenon Plough, &c., by manual labour. Also one to work by Steam, to answer the above purposes. State lowest price and all particulars.—Address, H. Boothman, 63, Bolton-road, Darwen, Lancashire.

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TO ARCHITECTS.—An Assistant, well accustomed to prepare competition and other drawings, seeks Employment. Good references.—Mr. Kedge, 3, Titchborne-street, Cambridge-square, W.

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ASHFORD, near WINDSOR, close to the station, suitable for detached and semi-detached villas.

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TO BUILDERS and ARCHITECTS.—Two magnificent SITES for Mansions may be had near Windsor Park, in positions where immediate sales at good prices might be anticipated. A few good detached Villas might be erected with equal advantage.—Address, "Mansion," Fairoaks, Chislehurst.

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Crown Building Land, St. James's.

A COMMANDING SITE on the North Side of Ryder-street, St. James's, and adjoining to St. James's-street, is offered by the Commissioner of Her Majesty's Woods, TO BE LET by TENDER on Lease for 80 years. The tenders to be delivered on Friday, June 30th. Forms and conditions of tender may be obtained at the Office of Woods, No. 1, Whitehall-place, or of Arthur Cates, Esq., No. 7, Whitehall-yard, S.W.

BRIDEWELL HOSPITAL. — Building Land in New Bridge-street, Blackfriars. The Governors of Bridewell Hospital are prepared to LET, on LEASE, for 80 years, by Public Tender, the SITE of RADLEY'S HOTEL, and the TWO HOUSES, No. 12 and 13, adjoining, in New Bridge-street, Blackfriars, together with the vacant land at the back, exclusive of a roadway of 40 feet in width reserved, measuring about 28,404 feet in area, and having a frontage to Tudor-street, Blackfriars, with option to the lessee of either pulling down or retaining so much of the buildings of Radley's Hotel and the adjoining houses as he may please; these buildings cover an area of 20,484 superficial feet. Forms of tender and plans of the site may be obtained on application of Mr. A. M. Jeaffreson, at the Clerk's office, Bridewell Hospital; or of Fredk. Marrable, Esq., the surveyor to the Hospital, No. 21, Whitehall-place.

The Governors do not pledge themselves to accept the highest or any tender. Tenders on the printed form to be delivered at the Hospital, in New Bridge-street, Blackfriars, before 12 o'clock on Saturday, 1st July, 1871.

TO MANUFACTURERS & BUILDERS. LAND suitable for Factories, with plentiful supply of pure water, good roads, and railway accommodation, to be SOLD or LET on Building Leases.—Apply to Mr. E. Littler, Upper Plaistow, E.

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London: SIMPKIN, MARSHALL, & CO.

THE BUILDING NEWS.

LONDON, FRIDAY, JUNE 16, 1871.

LOCAL CHARACTERISTICS.

THOUGH Nature has provided few strongly-marked features by which to distinguish the various districts of this country, almost every English county has a character of its own. The traveller, if previously acquainted even in the most superficial way with the district through which he passes, needs no great keenness of observation to ascertain by means of the landscape whereabouts he may be. The shades of difference, indeed, are delicate, and hard to describe in words. Waking up, perhaps, from a nap on a long journey, it might be difficult to give reasons for the impression that one is passing at the moment, say, through Leicestershire and not through Hertfordshire, or through Yorkshire and not through Durham. But the impression, if it is derived from a general knowledge of the district, is usually a correct one, and may be depended on even in parts of it which are quite new to the observer. The shape of the hills, the distribution of the trees, the thinness or rankness of the foliage, the size of the fields, and the nature of the farming, are so many data on which a judgment is, perhaps unconsciously, founded. If a river is visible, this will afford still stronger evidence, for in nearly all our rivers a local type is clearly marked. Come across them where you will, you recognise the deep and the slowly-flowing streams of Norfolk and Suffolk ; the Trent with its drift islands and its gravelly beaches; and the rapid torrents, each in a wooded valley of its own, which mark the north-east corner of the kingdom. The Thames, indeed, has somewhat the character of the Trent; the Huntingdonshire Ouse, the Stratford Avon, and the Northamptonshire Nen, do not differ very greatly from the East Anglian rivers; the streams of Derbyshire and Northumberland are both rocky alike. Yet, though the peculiarities of each may be hard to indicate, each has an individuality of its own. It is like a living thing, with a special and unique expression ; and almost from the beginning to the end of its course it has an indefinable personality which can be recognised in a moment.

But, whatever may be the differences of natural character between our different counties, still greater differences exist between their buildings. The remark, of course, applies with most force to old buildings. The modern villa—may it soon cease to be modern! —is, indeed, pretty much alike, from Thames to Tweed. This box with holes in it—no matter of what materials it may be built—can easily be brought into regulation pattern by a coating of cement, and its owner, wherever he may sojourn, has no difficulty in astonishing his neighbours by the architectural taste which he has learned from the London plasterer. He sticks to his principles, and far from doing at Rome as the Romans do, he prefers, even in the finest stone-producing districts of the kingdom, to revel in his native stucco. Short be his lease, and shaky his walls; may his villa quickly return to the mud from which it was taken! It is vain to look for local characteristics in a production like this. The work which exhibits them is that of a reasonable being, with a power of adapting himself to circumstances, not that of a machine which goes on for ever, repeating the same processes, and producing the same results. Hence arises much of the interest which such works possess. Each of them bears a history in it, more eloquent and more trustworthy than any that can be expressed in words. It may be an important one, a story of invasions, of battles, of national events, told in the stones of a cathedral church; it may be only the tale of some quiet village, made up of the fortunes and reverses of half a dozen families; but in either case its unaffected truthfulness makes it impressive. Local peculiarities, however, are the result of many causes. Difference of race, even in different parts of England, may possibly have some slight effect in originating them. Foreign intercourse, particularly in districts near the sea, has doubtless done more. Accidents of situation, such as those of being in a sheltered valley or on a bleak hillside, have often had a marked effect. The ease or difficulty of obtaining skilled labour, again, has resulted in striking contrasts between the character of buildings in populous and in remoter districts; and the general wealth or poverty of a neighbourhood had, of course, a still greater influence. Lastly, the nature of the building materials on the spot, and the means by which others could be brought from a distance, helped more, probably, than anything else to make the indigenous architecture of each county what it still remains. It is worth while to note some of the variations which have thus arisen, and to ask how far it may be possible or desirable to perpetuate them.

Amongst the most prominent, and those which first attract a stranger's notice, are the local differences in construction. These are often very great within a comparatively small distance. Compare, for example, two villages within a dozen miles of each other, near the respective boundaries of Northamptonshire and Huntingdonshire. In the former, almost every house is built of stone; the walls are of rubble, the dressings of ashlar, and the roofs covered with brown stone slates. The details have a decidedly architectural appearance. Late Gothic traditions still to a considerable extent survive; the local mason still puts up mullioned windows and four-centred doorheads with the mouldings of the sixteenth century. There are abundance of gables, most of them with stone copings; there are stone labels, and string-courses, and plinths, and, as a matter of course, stone jambs and sills, stone chimneys, and eaves-courses. Cross into the next county, and not a detail is the same. The best house in the village will hardly have so much as a stone window-sill about it. It is built, probably, with oak framing, filled in with red brick, with pebbles, or with cob-walling, plastered over. Its roofs, of tile or thatch, overhang the walls, and are as often hipped as gabled. There are string-courses, it is true, to throw off the rain, but they consist of sloping boards carried by brackets, and the casements open on to a similar board, protected, perhaps, by an apron-piece of lead. But even lead is sparingly used. The valleys in the roof are formed without it, by ingeniously lapping the tiles over each other; and even the chimney gutters are constructed in the same economical way. What little ornament exists is either in moulded brick or thin plastering, and there are few data from which the age of any particular example can be ascertained. Decoration was almost excluded by circumstances; the general effect is often highly picturesque, but its picturesqueness is of a totally different sort from that which prevails in the adjoining county. The difference in this case is evidently one of building materials. Stone is plentiful in Northamptonshire, while in a great part of Huntingdonshire there is nothing to be dug but gravel; and this circumstance alone has had such powerful effect that villages only a few miles apart might pass for those of two different countries. Peculiarities in local building material often show themselves in singular and unexpected ways. The slated house fronts of south-west Devonshire, for instance, are not what would be looked for by any one who had heard that flat-bedded walling-stone was abundant there. This stone, however, in reality, is an imperfect kind of slate; like other slates, it readily conducts moisture between its layers; and so, after building a wall with it in horizontal courses, it has been a common thing to protect it by a facing of vertical ones, as on an ordinary roof. The tiled fronts of Surrey and Sussex should perhaps rather be set down as a result of situation. The tiles are used in exposed places, as the most effectual way to keep out a driving rain, and are far more useful, as well as far more artistic, than the coating of cement which has of late been too often substituted for them. Another class of local peculiarities, those arising from foreign intercourse, are less marked in England than in Scotland. The French planning at Westminster Abbey, the French detail at Canterbury, and in some other Kentish churches, will, of course, be universally remembered. But there is, we think, a more subtle, though real, foreign influence to be noticed in some of our maritime counties. The Continental look of the old streets in Dartmouth has been often remarked, and something like it is traceable in various towns of Norfolk and Suffolk. Nothing is more natural than that a community which traded constantly with other countries should acquire something of their artistic feeling. The only wonder is that this should be so slightly marked. The social circumstances of various districts, their prosperity or poverty, their greater or less advance in civilisation, the nature of their business, the tenure of the land, and the rank and position of its owners, had the most important results. They appear most clearly, perhaps, in ecclesiastical work. The chain of fine churches which stretch for miles around many an ancient abbey—such, for example, as the rich one of Peterborough—show the effect of wealth and culture ; while the small and poor ones found in remote sections of the West of England may illustrate the repressive effect of backward civilisation. The prevalence of buildings of a particular period generally tells of a culminating-point in the prosperity of the district; and it is thus, perhaps, that the Early English style happens to prevail amongst Northamptonshire towers, and the Perpendicular one amongst those of Norfolk and Somersetshire. There is still another cause for local peculiarities, and it is one that deserves attention. The builders of a former time were not only influenced by practical necessity as to materials, but by something equally important, though far less obvious. They considered what would harmonise with local scenery—insensibly, perhaps, and if so, all the more thoroughly they made their work an improvement, and not a jarring intrusion into the landscape which surrounded it. Living all their lives in one locality, they felt instinctively what would suit it. Their minds grew in time with the situation, and their works are often in more perfect taste, so far, than those of the cleverest architect to whom the spot was a strange one. The advance of time has done away with many of the causes for local building customs; it has blended all parts of the nation more thoroughly together, and must thus to some extent assimilate their works. But it remains just as true as ever that style should be modified by materials, and that architecture should be adapted to its surroundings; and to this extent there will always remain a reason for local characteristics.

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THE INFLUENCE OF ART-CRITICISM.

MEN'S theories, it has been said, are usually the supplement of their practice. In the sphere of art, at least, whatever it may be elsewhere, this seems to be the natural and healthy state of things. The artist of genius and originality comes first, and creates a great work; the critic follows, and detects the laws by which this work was unconsciously produced. This once done, nothing, it might be supposed, could be easier than to obey the same laws and arrive at an equally good result. But it is not so: the rules which have to be kept in view are too numerous, too complicated; above all, too apt to come into continual conflict with each other, to make conscious and premeditated obedience to them an easy thing. The successful artist has to reconcile them all; but this can rarely be effected by a process of reasoning; he must do it, as Bacon says, "by a kind of happiness;" he must know when he has done it by a quick perception rather than by a slow process of analysis. This fact has been strongly insisted on by the greatest art-critic of our times. After investigating the arrangement or composition of some remarkable pictures, and indicating certain principles common to all those of the higher order, Mr. Ruskin warns his readers that it is no more possible to compose a picture by rule than it is possible to be witty by rule. The fault, therefore, does not rest with him if his works have sometimes been turned to a purpose which he did not intend. The scientific analysis of architecture and painting which he has made so fascinating will do but little in the training of architects and painters. Its true uses, we think, are rather for the public than for the professions; it shows what and why to admire, but it does not, and cannot, show how to produce what is worthy of admiration. It is questionable whether its effect on the artist may not rather be bad than good. If it leads him to a morbid habit of introspection, to a constant questioning of himself, "Am I following this law and that law, of which Mr. Ruskin has shown the importance?" it is as harmful to him as the study of anatomy to a valetudinarian. The way to escape disease is not to be always on the look-out for it. The healthy man is not he who is always fancying that his heart or lungs are going wrong, but he who is not conscious of having any heart or lungs at all; and the healthy artist is not the one who is always in dread of breaking some of the many laws he has to follow, but the one who does his work as a pleasure, and sees from the result that he is doing it well. Perhaps the best advice for any artist is that which an eminent living writer is said to have given to some one who asked his counsel, "Never publish anything that does not greatly please yourself." The outside world may dissect a work of art, may calmly take it to pieces and show the principles which govern it, but it is not in this mechanical way that it was or ever could have been produced. Such a work grows like a tree; it is not put together like a house; there is a kind of life in it; it is a natural, and not an artificial product of the mind. The chemist can analyse a tree, and say how much oxygen and hydrogen, carbon and nitrogen, make up its bulk; but no chemist has ever been able to reverse the process—to put these elements together into so much as a single leaf. In art-analysis the case is very similar. The chemistry of Mr. Ruskin, or Mr. Fergusson, or some other scientific investigator, may tell how much of natural form, how much of symmetrical arrangement, how much of feeling and expression, exists in a particular style; but this knowledge, when it is attained, does not practically enable any one to design the smallest fraction of ornament. It may, perhaps, help to form his judgment, to show him the best models for study, to open his eyes to their excellence. And it may, from the enthusiasm which has sometimes accompanied it, arouse his own enthusiasm, and deepen tenfold, by sympathy, his own love of nature and of art. This, after all, is the greatest good which the young art worker can owe to such books as the "Seven Lamps of Architecture," or the "Stones of Venice"—almost the greatest good which, for the purposes of his work, he can owe to any book whatever. Their dogmas, right or wrong, will help him but little; assuming them to be true, they will only cramp and fetter him if he tries consciously to obey them. He must follow them instinctively, or not at all; and to do this he must learn them, not from books, but from examples. It is impossible to explain in words one half the principles on which excellence in art depends; the way to discover them is to see them in use. An hour devoted to the study of a fine building is worth a week spent in reading about it; and the necessity for an artist is, not to reason about beauty, but to feel it. He needs to cultivate his taste and his judgment, not his argumentative faculties; and this is to be effected, not by scientific analysis, but by practice and observation. By laborious investigation every art might be brought under scientific rules; but, even where this would be easiest, the labour would totally overbalance the profit. A mathematician could calculate the angle at which a swimmer should bend his knees and turn out his hands and feet; he might write an exhaustive treatise on the force and frequency with which each separate muscle should be contracted to produce the best result; but when all was done, there would remain no better way of learning to swim than the old one—of plunging into the water and seeing how other people do it. The danger in much of our modern art-criticism is that of its producing men who swim admirably in theory, but who, when they fall into real water, have a most remarkable alacrity in sinking to the bottom.

VIOLLET LE DUC'S "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE."*

VIII.

At first it was evidently feared that without the gallery over the side aisles to prop and stay the nave pillars they would not stand, but, after minor attempts, a bold essay was made in the cathedral of Bourges. Yet so deeply was the appearance of this gallery imprinted in the minds of the people that fictitious ones were represented, as we see in the section of this cathedral (Fig. 21.) It will be here observed that the aisle A has no gallery, and that the nave piers rise free, and isolated from any lateral support up to the springing of the aisle vaulting, and that the windows at B throw their light directly into the nave, unimpeded by any arcading. The outer aisle C is kept low, and is lighted by the windows D in the external wall. But the architect could not do without the horizontal line of the triforium, and to replace the well-known feature an arcaded passage is introduced at E E, where the roofs of the side aisles abut against the main walls. The upper part of the church is lighted by large clerestory windows at G, in the same manner as was Notre Dame of Paris. In this section we see how the architect has endeavoured to reduce the height of his building to the lowest practicable point, and it is worth while examining it from this aspect. He could not well make his external aisle any lower; it is only about 15ft. to the springing of its arches. The pitch of the roof which covers it was forced upon him by his material, tiles; light to his nave was necessary, and his windows here are as large, as low, and as near to the aisle roof as he could get them. The same reasoning determines the position of his clerestory window-sills, and the springing of his main vault. Thus, then, if we search for the idea of symbolism in the height of these "grand Gothic naves," we shall find instead a necessity against which for fifty years their architects were struggling against. Width and light they wanted; "height was forced upon them in searching for these." Emboldened by experience, the architects of the thirteenth century widened their naves, and, taking courage, abandoned the system of double aisles, trusting to one wide aisle only to resist the thrust of the nave groining; and very rarely after the end of this century do we find the expedient of the support of a second aisle resorted to. Gothic architecture was perfectioned; it had concreted itself; the system of construction had now become decided on, new principles were no more sought for, but those already adopted, refined and developed; its spring time was over, and no more buds and shoots sprung forth; it blossomed for a time, it fruited—became seedy, in fact, and then it died away. From the thirteenth century onwards the aim of the architect seemed to be to reduce his mass to the minimum; his nave and aisles were carried by as few pillars as possible, his wall space was cut away into window openings; to balance rather than to build seemed his aim, and he degenerated into a mere man of science, and then tried to cover his multitude of sins by a broadcast ornamentation. The fourteenth and fifteenth centuries were disastrous to France. Her King's excommunication commenced the period of her depression. Cressy, Poictiers, and Agincourt followed each other. Overrun by us English, from the end of the fourteenth until the first half of the fifteenth century closed, the arts could not flourish. Few new religious edifices of any magnitude were built, and the architect was chiefly employed, when employed at all, in completing those which had already been begun, or in rebuilding those which time or war had destroyed. The country was impoverished, but the clergy were as exigent as ever; big buildings they would have, let the money be never so scarce or so little, so the architect had to cut down all his material, and supply the place thereof with what brains he had; ingenuity took the place of dignity, science slew art, and to this day she carries on her front the indelible mark of the murderer. If you doubt it, look at the works of our civil engineers.

M. le Duc devotes many pages and much learning to show the influence of Rhenane and French architecture upon each other, and we regret the exigencies of our space do not permit us to follow him on this interesting bye-way. Our aim, however, is to lay before our readers such portions of his work as are of general rather than of local interest, and the influence of this fusion of the two species was but felt within a limited district, nor did it produce anything which exerted an influence on the architecture of Western Europe generally. The effete Byzantinism of the Carlovingian epoch was lingering rather than living, and the struggle between it and the new-born boldness and freedom of the Gothic mode was not calculated to foster progress. Indeed, the new fashion was gradually killing the old, and even the constant intercourse with the birthland of that Orientalism which had been a foster-mother to European art brought about by the Crusades, could not infuse new life into it. The Crusades, indeed, played but a very small part in the history of the arts of the West, for it is precisely at the moment when these wars were assuming importance that we see architecture abandon Gallo-Roman and Byzantine traditions in order to develope itself in an entirely new manner. Whilst architecture remained entirely in clerical hands, we can easily understand that the constant intercourse between the religious houses of the West with those of the Holy Land, the Levant, and Northern Italy (which more than any other Western country had been invaded by Byzantine artists), brought out a certain Orientalism in its character. But when the arts of architecture were towards the middle of the twelfth century practised in France by laymen (not laymen, by the way, in the sense just now used by the great Cole, C.B., in his International Exhibition circular), these new artists who studied and practised their art had not the East at their disposal; they took such traditions of it as they found in the monasteries which employed them, and amalgamating them with their own Western ideas, produced an indigenous architecture. This lasted so long as there was soil for it to grow, but, as we have indicated, the troublous times came, and it perished. A new mode succeeded it, and at the end of the thirteenth, and commencement of the fourteenth centuries, when France again rose from her sea of troubles, the Italian element began to manifest itself. There was, of course, yet much "Gothic" tradition remaining, but chiefly constructive rather than artistic in its tendency, and French architecture was no more a national art. Step by step Italian art pushed its predecessor further out of sight; amalgamate the two could not; the Church of S. Eustache at Paris had shown the futility of such an attempt, and outraged sense forbade its frequent repetition. The politics of France, and the persons of its rulers, were becoming Italian, and, true to their mission, the arts recorded the change of national sentiment, but in none was that change so strongly marked, and none other records that change in such legibly-written characters, as does the art of architecture.

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* Dictionnaire raisonné de l'architecture Française du XI. au XVI. Siecle, par M. Viollet le Duc, Architecte du Gouvernment, Inspecteur-général des Edifices Diocesains. 10 vols.; 8vo.; Morel, Paris, 1854—1868.

PAINTED DECORATIONS IN NORFOLK CHURCHES.*

THE Rev. John Gunn, in his "Notes to the Illustrations of the Rood-screens at Barton Turf," gives a lamentable description of damage done to that church during the incumbency of his predecessor, the Rev. William Gunn, in 1793, at which time the screen itself, as well as its paintings, had but a hair-breadth escape from destruction. The church being under repair, that vicar had availed himself of the opportunity to make a tour on the Continent, and on his return he could scarcely recognise his own church, so entirely had it been remodelled, but he was fortunately just in time to save the chancel-screen. The paint was already mixed with which it was intended to wipe out its ancient glories, in order that the cleanliness might be substituted which was so often mistaken for godliness in those (artistically-speaking) barbarous times, when churchwardens were rampant and their authority unquestioned. This was, however, the only remnant left of all that was once beautiful in this fine church. "The benches of oak," we are told, "and the carved poppy-heads, had been replaced with family deal pews; the diamond-shaped quarries in the windows with large rectangular panes of glass. The fresco-paintings on the walls and stained glass in every window had altogether disappeared. The roofs, of lofty pitch, adorned with figures of saints beneath them, had given way to low-pitched roofs, and that of the nave was ceiled flat, so as to cut off the upper part of a magnificent arch in the tower, and, what seemed to the vicar like seething the kid in the mother's milk, two of fine peal of five bells," having been found to be cracked, were sold, and the proceeds applied towards defraying the expenses of the *restorations*. It follows, therefore, that the chancel-screen of Barton Turf Church seems now out of character with the building, and it ought rather to be thought of in connection with the lost splendour of the fabric, which in some degree resembled that still existing at Southwold.

The church, dedicated to S. Michael, and standing upon high ground, is visible from a considerable distance around. The nave is of the Decorated period; the tower (noted for its beautiful proportions) and the chancel were built about 1,400. The chancel-screen was probably erected about the commencement of the fifteenth century, although it is evident, from certain details of the costumes, that some of the paintings were not executed before the middle of that century. The screen is by no means so important as that at Randworth, the nave in this case being narrower, and the chancel arch occupying nearly the whole of its width. It is, in general arrangement, almost identical with that part of the composition described at Randworth which forms the rood-screen proper, and has eight arched divisions with slender buttressed piers, cusped fringing to the arches, and delicate groinings starting from the same springing line as that of the arches, and rising to a continuous moulded cornice, enriched with the strawberry leaf cresting ornament in the main hollow. The central pier is intercepted by a sub-arch, cusped and crocketed, which, spanning the central two out of the eight divisions of the screen, forms the entrance to the chancel opposite the central passage way of the nave. The other six divisions, three upon each side, have the lower parts filled in, to the height of 4ft. 6in., with two richly-tracceried panels to each division. This range of twelve panels, which bears painted figures of unsurpassed excellence, forms the principal attraction of the screen; but the whole of the woodwork was richly gilt and decorated in a suitable and harmonious manner.

The subjects represented in these panels consist of the heavenly hierarchies, and of three female saints—viz., S. Zita and S. Apollonia on the north, or Gospel side, and S. Barbara on the south, or Epistle side. The word hierarchie, according to the "Aurea Legenda," is derived from Ieros, that is holy, and of Archos, that is a prince; and so "Ierarchye is a holy pryncypate, and every Ierarchye conteyneth thre orders of angelles," and "the soverayne Ierarchye conteyneth Cherubyn, Seraphyn, and the Thrones. The mydell conteyneth the domynacyous, the vertues, and the potestates. The laste conteyneth pryncypales, angels, and archangels." The order thus given, is not, however, followed in their disposition upon the panels of this screen at Barton Turf. The beauty, artistic skill, and angelic expression displayed in the faces of these figures is, according to Mr. Gunn, of far higher quality than in those upon the Randworth or any other of the Norfolk screens, and is second only to the exquisite painting in the vestry of Norwich Cathedral.

A good deal of controversy has taken place upon the question as to the nationality of the artist who executed them, and the reason of the superiority of his work to that of the other artists employed on the rest of the screens in the county. We find that Mr. Albert Way and Sir Digby Wyatt inclined to the opinion that the painting of the Resurrection preserved in Norwich Cathedral resembled Italian art, and that the former gentleman suggested that these paintings were Flemish. Dr. Waagen, however, pronounced the Norwich picture to be English, and Mr. L'Estrange asserted the same with regard to those of Barton Turf, and in support of his opinion brought forward decisive proofs of the existence of numerous painters in Norwich from very early times. We have ourselves but little doubt upon the subject, and consider that England is fairly entitled to claim these works as her own. It is true we have not yet been able personally to inspect these paintings at Barton Turf, but we have examined with care some most exquisite copies of them taken by Mr. W. Wardell, and we have also seen the Norwich picture, and compared it with the undoubted English picture exhibited at the Manchester Fine Art Exhibition, and subsequently in the National Portrait Exhibition at South Kensington, and with other contemporary English miniature work in the British Museum. The whole of these bear a very close resemblance in general character to each other, and are entirely distinct from the recognised work of the artists of the time in other countries. It is a character of art which has not hitherto received the attention it deserves, or the few remnants of it which have been preserved to our time would be appreciated and compared with the work of Fra Angelico in Italy, or that of the nameless master of Cologne, in Germany. Indeed, for the very valuable quality of being in perfect harmony with the architectural details they were intended to decorate, these paintings of Barton Turf may be declared unequalled. In writing thus of them as works of art, we refer mainly to the beauty of the faces of the figures, and the excellence of the ornamental details of costume. The strange ungainliness of the feet and hands is a sad drawback, accountable only by the probability that inferior artists were employed upon them.

It is with much pleasure that we are able to state that some of the very careful and beautiful copies made by Mr. Wardell, and above referred to, will form part of the collection of polychromatic studies from the Norfolk Churches which Sir Wm. Tite has liberally purchased for the library of the Royal Institute of Architects.

The representative of the Seraphin, the first order of the Superior Hierarchy, occupies the place of honour, and is the first in order on the north of the entrance to the chancel. He is crowned with a wreath of foliage and nine golden rays, has six red wings, and red plumage and golden girdle of clouds. He wears an ermine tippet, with border and golden morse, a mantle, green without and light coloured within, has a thurible in the right hand, and his left hand is upon his breast. This position of the latter is characteristic of this order of seraphim, or "fiery" angels, which are emblematic of love, and take precedence as such. The figure of the Cherubim stands on the other side of the chancel entrance. This order signifies "wisdom or intelligence," or "power," as others say, and accordingly this image is covered over with eyes, emblematic of omniscience. He is crowned with a pink orb, with golden rays and a cross fleury, has six wings, and golden plumage with the eyes. He wears a linen girdle, tied in a bow, ermine tippet, and mantle of the colour emblematic of knowledge, and both his hands are blue, uplifted as in adoration. These two figures have green diapered backgrounds. The representative of the Thrones stands on a red diapered ground in the second panel on the south side. He is crowned by oak leaves and rays of gold, and has six wings, and varied plumage, plain tippet, with morse and green mantle, with jewelled border. He holds a pair of scales in the right hand, and a throne upon clouds in the left. The figure standing for the Dominations, the first order of the middle hierarchy, bears a golden tiara or triple crown, and is vested in a red chasuble with jewelled orphrey, amice, and fringed dalmatic. He has four wings, and a golden sceptre in the right hand, and the left is raised. The representative of the Virtues wears a white and gold crown. He has four wings and blue plumage, a linen girdle, plain tippet, and light coloured mantle, the predominating colour of which is indicative of purity. St. Raphael, who stands for the Powers, has on his head a helmet and wreath, enriched nimbus, and rays. He is clad in plated armour, and has four wings, a girdle of bells, diapered golden mantle with morse and ornamental breastplate. He stands upon a chained demon, whom he is striking with a scourge with his left hand.

Of the Inferior Hierarchy, the Principality has a crown, with nimbus, and four wings with light red plumage. The girdle has two rows of bells. The tippet is richly embroidered, and the mantle is light-coloured. He holds a bottle in the right hand and a palm branch in the other. S. Michael, as the Archangel, is crowned with an embossed orb with leaflets, and is clad in plate armour, without helmet. He has a girdle with bells, and a green mantle. He stands on a citadel, and holds a mace in his right hand and sword in his left. The Angel has an ensigned crown upon flowing hair, and is vested with alb and girdle, to which an alms-box is attached. Two souls as naked figures are kneeling on his left. His right-hand is on his breast, and his left holds a spear of gold.

We have extracted the above from Mr. Gunn's descriptions, on account of the general interest attached to these representative figures of the heavenly host, and their frequent repetition in Mediæval art. We must refer our readers to the work itself for the very interesting account of the three other more special figures which fill up the remainder of the twelve panels of the screen facing the nave. They represent S. Zita, the patroness of female discretion and good housekeeping, who died in 1272; and the Virgin martyrs S. Apollonia, A. D. 249, and S. Barbara, A. D. 306. There was also a side screen, separating the chapel of S. Thomas of Canterbury from that of the "Name of Jesus," at the east end of the south aisle of the church. This had been concealed behind a pew, on the removal of which the figures of the three sainted kings, S. Edmund, S. Edward the Confessor, and S. Olave of Denmark, were disclosed. These, with the screen they adorned, were coeval with the chapel of S. Thomas, which was built prior to 1445. There was also a figure of Henry VI., King of England, evidently painted at a later date. These paintings possess very great historical interest, and Mr. Gunn's descriptions of them, accompanied by short memoirs of the personages they pourtray, is very readable and full of information.

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* See BUILDING NEWS, page 289, No. 850.

The illustrations given in this work, unfortunately, are unaccompanied by any plate rendered in colour, to give an idea of their effect; but, as we have said, the Library of the Institute of Architects will shortly possess, in Mr. Wardell's drawings, what will be far more valuable than any chromo-lithographs could possibly be, and our readers will, we doubt not, be thankful to us for calling their attention to them, as affording, ogether with these outlines and the descripttion published by the Norfolk and Norwich Archæological Society, a very fine idea of a little-known but highly-meritorious phase of English Mediæval art.

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SCULPTURE AT THE ROYAL ACADEMY.

MISERABLE and unattractive as the sculpture department had become at the Academy Exhibition in Trafalgar-square, it is even worse and worse off in the new buildings at Burlington House; and in both cases this result must in great measure be attributed to faulty architectural arrangement as to the portion of the building allotted to the display. The miserable dungeon to which the plastic art was consigned at Trafalgar-square seemed to leave no further descent of moral abasement possible; but what appeared to be impossible has been achieved by the architect at Burlington House. At Trafalgar-square sculpture, though sent down to the cellars, had at any rate a narrow, but well-defined domain to itself, to which those who were so disposed descended to inspect the long array of busts of the notabilities of the day, and the occasional more aspiring efforts of the sculptural genius of the age. In Burlington House sculpture is scattered through three apartments of different sizes and shapes, which, running across the building, intervene in the midst of three courses of picture galleries, between which they afford connecting passages. The consequence is, that the pictures and drawings being catalogued continuously from No. 1 to 1178, whilst sculpture engrosses the remaining numbers, 1179 to 1338, the latter are, in the ordinary way of "doing the exhibition," altogether overlooked in the pursuit of the more gaudy products of the pencil. By this arrangement, whilst the cold pale products of sculpture are everywhere seen hemmed in by flaunting frames, and glowing colours, there is no broad continuous opening between the three compartments allotted to them, which would have afforded the effect of a perspective vista—a condition so essential, in combination with congenial architectural arrangement, to the contemplation and thorough enjoyment of the products of this, the grandest of the arts of design. When, to all this, it is added that the narrow "vestibule," the first of the three compartments assigned to sculpture, is also appropriated to the money-takers, with their clicking turnabout wheels, the ignominy of the position will be acknowledged as complete.

It may be asked how we would have avoided all this, and what better provision we would have made for this particular department of art? In proceeding to answer this question, we might be tempted to commence by venturing a criticism upon the general ground plan of the building, very much at variance with the unthinking and indiscriminate praise which it has been the fashion to lavish upon it. For this, however, we have not time or space at present, and we will therefore content ourselves with two general remarks. In the first place, we would remark that in constructing a large building for the purposes of a picture gallery it is not sufficient to put in juxtaposition a certain number of void compartments, without regard to beauty of proportion in themselves severally or relatively with one another; and, this abstract principle being conceded, we would ask any informed eye to look at the block plan of the new Royal Academy, as printed on the cover of the catalogue, and determine how far it has been successfully considered by the architect. In the second place, we hazard the opinion that in constructing a suite of rooms for a picture gallery they should be arranged in such an order that the visitor should be able to make his way through them continuously from end to end, without risk of losing himself in sideways, or being cast ashore on quicksands. To this rule there may be occasional exceptions in the case of small annexes for the exhibit of special objects; but these should always be side-lighted, and should have only one doorway or passage connected with the main suite of apartments, to prevent mistakes. In the Burlington House Gallery we have a series of ten rooms for pictures going round the four sides of the building (besides the Lecture Room, which is not numbered, because it is a *piece apart*), falling into no sort of order of succession: with a central hall lying in the midst, which, being in no sense adapted as a point of departure, only offers at each of its four doors an opportunity of losing one's way.

To return, however, more particularly to the arrangements made for the sculpture department of the Exhibition, and how they might have been improved. Our suggestions upon this point will be very simple—namely, that instead of occupying, though it does not fill, the three compartments (the vestibule, the central hall, and the sculpture gallery), running from south to north, it should have had appropriated to it a continuous gallery extending along the south front. This gallery would have been somewhat narrower than the picture galleries now occupying that side of the building, and, if the conditions of the site permitted it, lighted from the side. This arrangement would have given unity and importance to the collection of sculpture as a whole, and, with doors at either end, have afforded an elegant passage of approach to and egress from the picture galleries, which could then have held their own ground in unbroken continuity.

It is perhaps as well that we should have had so much to say upon points of architectural criticism suggested by this exhibition of sculpture, for the works of sculpture themselves present very little that is worthy of serious remark save the sad reflection that, in connection with similar displays of former seasons, they denote a gradual and continuous falling off, both as regards the inventive faculty and technical performance. The array of portrait subjects is as numerous and as oppressive as ever, whilst the performances aspiring to the rank of poetry, or, more often, of *genre*, exhibit a littleness of conception, allied to a listless inaptness of execution, which it is painful to contemplate.

Mr. J. M. Ap Griffith first catches our eye with his "Helios, or the supposed form of the Colossus of Rhodes" (1180), a miserable attenuated figure of some twenty inches high, with uplifted arm bearing a lamp, feebly moulded in plaster. A little further on Mr. G. Halse gives us a statuette in marble of "Young England's Sister" (1202), a companion to "Young England" himself of last season, representing a small, common-place child, with a book and pencil in either hand, and at her feet a set of croquet implements. In 1217 Mr. G. A. Lawson bids us "Come unto these yellow sands," with a group of two long weedy girls, one making semblance of dancing with shells in her hands, the other kneeling, and supposed to be looking out at the sea—a sad affair altogether. Mr. E. G. Papworth's study of "Spring" (1222) is oppressed with a heaviness of feature and dulness of expression little appropriate to the season. There is a bald simplicity in Mr. J. Durham's group of a fine active boy, bearing a little, somewhat timorous urchin on his shoulders to whom he is preparing to give "A Dip in the Sea" (1224). His "Leander" (1269), and "Hero" (1276), executed in marble, are pretty, but weak. Mr. C. F. Fuller occupies an undue extent of space with a group which he calls "The Peri and her Child" (1253), consisting of a rather heavy female, lying at full length in a sort of bark, with a chubby boy huddled up in her arms. Mr. W. C. Marshall hits upon the novel idea of representing "A Girl Fishing" (1278) half-seated, with a bit of real string in her hand, the realistic effect of which latter may easily be imagined. Mr. E. B. Stephens's "Zingari" (1283) is a lifeless, expressionless, and rather awkwardly-composed group. "Maiden Meditations" (1287), by Mr. Ruddock, represents a small lady, of portentous length, clothed in heavy drapery, and looking down her nose in unutterable unmeaning. Mr. J. S. Westmacott's diminutive "Eve Listening to the Serpent" (1307) differs but in a slight modification of the attitude from the celebrated "Eve at the Fountain," by the artist's father.

We turn now from this dead level of trivialities to the few works which claim attention, either by their merit or their purpose; and in doing so we are compelled to acknowledge the general superiority of the contributions of foreign artists, as respects the essentials of design and elaborate finish. Witness, for instance, M. Carpeaux's sprightly figures, male and female, "Le Pêcheur Napolitain" (1263) (the Neapolitan Fisherman), and "La Jeune Fille à la Coquille" (1262) (Young Girl with a Shell), which stands on either side of the door leading from the central hall into room No. 3. Unlike the generality of our moulders of clay and chisellers of marble —*pseudo*-sculptors"—this French artist, with a sound knowledge of anatomy, is not afraid to give life and action to his figures, and does so with a result which contrasts cheerfully with the motionless dummies which surround them. Both subjects are wrought up to the highest point of finish. M. D'Epinay's "David" (1267) is also a work remarkable for purpose and study, and here, though we have repose, the modelling and expression are indicative of the excitement of reaction. The sling is in his right hand, and the hideous head of Goliath he trails suspended at his feet. The selection of an extreme oriental type for the head of the David is not contributive to the æsthetic effect of the work, nor is it in accordance with the principles of idealism, which should be observed in high art—particularly sculpture. M. Vinoelst's "Daughter of Pharaoh" (1279) is well imagined and carefully studied; and M. Gabrielli's bas-relief of "Aurora" (1319), discloses nice intention and good workmanship, albeit somewhat poor in treatment. Mr. T. Woolner exhibits a large bas-relief, representing "Virgilia Bewailing the Banishment of Coriolanus" (1277), which has merit in many respects, but is open to this objection, that it places sculpture upon sculpture—as great an error, as we hold it, in art, as it would be in heraldry to put colour upon colour, or metal on metal. The catalogue tells us that Virgilia, having caused a bas-relief representing her husband's great achievements in Corioli to be carved in her chamber, after gazing at it, throws herself against the wall in an agony of despair. This figure, which is about life-size, is well studied; so is the bas-relief overhead; but from the circumstances we have before alluded to there is a little incongruity in the composition as a whole. Mr. E. B. Stephens has an "In Memoriam" (1294), being part of a mural monument to be executed in marble, which transcends, but only in a slight degree, the ordinary run of cemetery sculpture. At the base is the recumbent figure of the deceased, resting his head on his helmet. Above is a bas-relief of the raising of Lazarus, the composition of which displays care and study, and is satisfactory in some respects. It, however, unfortunately betrays weakness where it should most display strength. The Christ stoops forward in an undignified manner towards the body, instead of standing erect, and pointing upwards, in conformity with the divine command—"Arise!"

The works of portraiture are of the ordinary commonplace run, presenting little or nothing of interest to any but the sitters and their immediate friends. The colossal bust of the Queen (1273), by Miss Grant, executed in marble for the Raja-i-Rajgân of Kappoortala, differs widely in type from the representations of her Majesty to which we have been accustomed. It is massive, and perhaps a shade masculine in character, and we are not quite sure that every one will like it. The Princess of Wales is represented in stately form and guise by M. C. E. Van Denbosch (1272). The Marquis of Lorne has not much to thank Count Gleischen for (1274); neither is the Princess Louise under much obligation to the creative and ennobling fancy of Mrs. Thornicroft (1271). The same cannot be said of Mr. Gladstone (1310), who comes out really very well at the hands of Mr. N. N. Burnard, who has given him a noble and pleasant look, to which, nevertheless, the essentials of likeness are not entirely sacrificed. Mr. G. G. Adams has succeeded in exaggerating the eccentricities of feature of the late Lord Brougham (1210), without attempting to realise the grand intelligence which lighted up his eloquent head, even after the eloquence of speech had well-nigh departed from him. The same artist has also a model of a statue of Dr. Hugh M'Neile, Dean of Ripon (1251), which has been executed in marble in St. George's Hall, Liverpool, a work chiefly remarkable for its vast smooth expanse of drapery, hanging as lifeless and motionless as 'twere on a tailor's dummy.

H. O.

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A MILLION BLUNDERS.*

(*Continued from page* 449.)

It is a sure sign man is not an artist, if, instead of repairing his defects, he calls an intellectual superior to counteract them. The fire-escape is creditable to its inventor, but disgraceful to the builders. They construct a fire-trap without an escape; and so their fellow-citizens are to cudgel their brains and supply the builders' want of intelligence and humanity by an invention working *from the street*. The fire-escape can after all save but a few of the builders' victims. The only universal fire-escape is—The rational roof.

To be constructed thus: Light iron staircases from the third floor to top floor and rational roof. Flat roof, or roofs, metal covered, with scarcely perceptible fall from centre. Open joists and iron girders, the latter sufficiently numerous to keep the roof from falling in, even though fire should gut the edifice. An iron-lined door, surmounted by a skylight; iron staircase up to this door, which opens rationally on to the rational roof. Large cistern or tank on roof with a force-pump to irrigate the roof in fire or summer heats. Round the roof iron rails set firm in balcony, made too hard for bairns to climb, and surmounted by spikes. Between every two houses a partition gate with two locks and keys complete. Bell under cover to call neighbour in fire or other emergency.

Advantages offered by "*the* rational *roof*:"—

1. High chimney stacks not needed.

2. Nine smoking chimneys cured out of ten. There are always people at hand to make the householder believe his chimney smokes by some fault of construction, and so they gull him into expenses, and his chimney smokes on—because it is not thoroughly swept. Send a faithful servant on to the rational roof, let him see the chimney-sweep's brush at the top of every chimney before you pay a shilling, and good-bye smoking chimneys. Sweeps are rogues, and the irrational roof is their shield and buckler.

3. The rails painted chocolate and the spikes gilt would mightily improve our gloomy streets.

4. Stretch clothes' lines from spike to spike, and there is a drying-ground for the poor, or for such substantial people as are sick of the washerwomen and their villany. These heartless knaves are now rotting fine cambric and lace with soda and chloride of lime, though borax is nearly as detergent and injures nothing.

5. A playground in a purer air for children that cannot get to the parks. There is no ceiling to crack below.

6. In summer heats a blest retreat. Irrigate and cool from the cistern: then set four converging poles, stretch over these from spike to spike a few breadths of awning; and there is a delightful tent and perhaps a country view. If the Star and Garter at Richmond had possessed such a roof, they would have made at least two thousand a year upon it, and perhaps have saved their manager from a terrible death.

7. On each roof a little flagstaff and streamer to light the gloom with sparks of colour, and tell the world is the master at home or not. This would be of little use now; but, when once the rational roof becomes common, many a friend could learn from his own roof whether a friend was at home, and so men's eyes might save their legs.

8. In case of fire the young and old would walk out by a rational door on to a rational roof, and ring at a rational gate. Then their neighbour lets them on to his rational roof, and they are safe. Meantime, the adult males, if any, have time to throw wet blankets on the skylight and turn the water on to the roof. The rational roof, after saving the family which its predecessor would have destroyed, now proceeds to combat the fire. It operates as an obstinate cowl over the fire; and, if there are engines on the spot the victory is certain. Compare this with the whole conduct of the irrational roof. First it murdered the inmates; then it fed the fire; then it collapsed and fell on the ground floor, destroying more property, and endangering the firemen.

The shoe pinches all men more or less; but, on a calm survey, I think it pinches the householder hardest.

A house is as much a necessary of life as a loaf; yet this article of necessity has been lately raised to a fancy price by the trade conspiracies of the building operatives—not so much by their legitimate strikes for high wages as by their conspiring never to do for any amount of wages an honest day's work—and the fancy price thus created strikes the householder first in the form of rent. But this excessive rent, although it is an outgoing, is taxed as income; its figure is made the basis of all the imperial and parochial exactions that crush the householder. One of these is singularly unfair; I mean "the inhabited house duty." What is this but the property tax rebaptised and levied over again, but from the wrong person? The property tax is a percentage on the rent, levied in good faith, from the person whom the rent enables to pay that percentage; but the inhabited house duty is a similar percentage on the rent, levied, under the disguise of another name, from him whom the rent disables.

In London the householder constantly builds and improves the freehold: instantly parochial spies raise his rates. He has employed labour, and so far counterbalanced pauperism; at the end of his lease the house will bear a heavier burden; but these heartless extortioners cannot wait the end of the lease; they bleed the poor wretch directly for improving parochial property at his own expense. At the end of his lease the rent is raised by the landlord on account of these taxed improvements, and the tenant turned out with a heavier grievance than the Irish farmer; yet he does not tumble his landlord, nor even a brace of vestrymen. The improving tenant, while awaiting the punishment of virtue, spends twenty times as much money in pipes as the water companies do, yet he has to pay them for water a price so enormous that they ought to bring it into his cisterns, and indeed into his mouth, for the money.

He pays through the nose for gas.

He bleeds for the vices of the working classes; since in our wealthy cities nine-tenths of the pauperism is simply waste and inebriety. He often pays temporary relief to an improvident workman, whose annual income exceeds his own, but who will never put by a shilling for a slack time.

In short, the respectable householder of moderate means is so ground down and oppressed that, to my knowledge, he is on the road to despondency and ripening for a revolution.

Now, I can hold him out no hope of relief from existing taxation; but his intolerable burden can be lightened by other means; the simplest is to keep down his bill for repairs and decorations, which at present is made monstrous by original misconstruction.

The irrational house is an animal with its mouth always open

This need not be. It arises from causes most of which are removable—viz., 1st, from unscientific construction; 2nd, plaster ceilings; 3rd, the want of provision for partial wear; 4th, the abuse of paint; 5th, hidden work.

Under all these heads I have already given examples. I will add another under head 3. The dado or skirting-board is to keep furniture from marking the wall; but it is laid down only one inch thick, whereas the top of a modern chair overlaps the bottom an inch and a half. This the builders do not or will not, observe, so every year in London fifty thousand rooms are spoiled by the marks of chair-backs on the walls, and the owners driven to the expense of painting or papering sixty square yards to clean a space that is less than a square foot, but fatal to the appearance of the room.

Under head 4 let me observe that God's woods are all very beautiful; that only fools are wiser than God Almighty; that varnish shows up the beauty of those woods, and adds a gloss; and that house paint hides their beauty. Paint holds dirt, and does not wash well; varnish does. Paint can only be mixed by a workman. Varnish is sold fit to put on. Paint soon requires revival, and the old paint must be rubbed off at a great expense, and two new coats put on. Varnish stands good for years, and when it requires revival, little more is necessary than simple cleaning, and one fresh coat, which a servant or anybody can lay on. 5. Hidden work is sure to be bad work, and so need repairs, especially in a roof, that sore tried part; and the repairs are the more expensive that the weak place has to be groped for.

I have now, I trust, said enough to awaken a few householders from the lethargy of despair, and to set them thinking a little, and organising a defence against the extraordinary mixture of stupidity and low instinctive trade cunning of which they are the victims; for a gentleman's blunders hurt himself, but a tradesman's blunders always hurt his customer; and this is singularly true of builders' blunders; they all tend one way—to compel the householder to be always sending for the builder, to grope for his hidden work, or botch his bad work, or clean his unscientific windows, or whitewash his idiotic ceilings, or rub his nasty unguents off God's beautiful wood, and then put some more nasty odoriferous unguents on, or put cowls on his ill-cleaned chimneys; or, in short, to repair his own countless blunders at the expense of his customer.

Independently of the murderous and constant expense, the bare entrance into a modest household of that loose, lazy, drunken, dishonest personage who has the impudence to call himself "the British workman," though he never did half a day's real work at a stretch in all his life, is a serious calamity, to be averted by every lawful means.

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Fall of a Quay Wall at Swansea.—The quay wall of the river at the port of Swansea gave way on Thursday, the 2nd inst., doing damage to the extent of £50,000. The accident was caused by the cutting of a new canal parallel to the quay-wall. The water in the river having been let out, the weight of the water in the canal caused the breach.

Tenders for the New Winchester Town Hall and Public Offices.—At a special meeting of the Town Council, held on Wednesday week, to receive the report of the Building Committee as to the acceptance of one of the seventeen tenders, the committee recommended the acceptance of the tender of Messrs. Joseph Bull & Sons, of Southampton, for £10,496, on their giving approved sureties for the due performance of the contract. The report was adopted.

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* By Charles Reade, in the *Pall Mall Gazette*.

THE METROPOLITAN FIRE BRIGADE.

THE Metropolitan Fire Brigade, under the management of Captain Shaw, has recently contrived to make itself conspicuous and ridiculous. Any one in the habit of reading the London papers during the last month must have been struck with the unusually large number of fires which have taken place. In fact, the energies of the firemen must have been pretty severely taxed. But, strange to say, this time of all others has been the time selected for a royal frolic, which might have been attended with lamentable consequences. On Monday last the Metropolitan Fire Brigade was inspected by the Duke of Edinburgh, the Grand Duke Wladimir, the Duke of Sutherland, and other noblemen. This was all right enough; though the Royal party had infinitely more attention paid to it than a committee of philosophers, inquiring into the best means of extinguishing fires, would have had. After the royal party had examined the apparatus and contrivances in use for extinguishing fires, visited several of the metropolitan stations, and taken a voyage on the floating engine at Southwark-bridge, the exhibition was wound up with what was described as "an imaginary alarm of a great riverside fire." All the stations, we are informed, were signalled as if a great conflagration were taking place, and they quickly responded by dispatching men and engines to the spot indicated. "Their Royal Highnesses," it is added, "were much pleased with the alacrity displayed by the brigade authorities." But what was a nice bit of evening fun for "their Royal Highnesses" might have been a serious loss to others. As it was, people in various parts of London were startled by the rushing of steam fire-engines to the central spot, and hundreds in the immediate neighbourhood were naturally alarmed. But while the people were running about to see where the conflagration was, Captain Shaw and "their Royal Highnesses" were laughing. It would be well, however, that Captain Shaw, who no doubt is solely responsible for this dangerous piece of folly, should consider that he is paid out of the public funds, not to play at extinguishing fires, that the engines and brigade under his control cannot be in two places at once, that moments are precious when fires break out, and that he and those under him cannot be too ready to meet any emergency that might arise. Nero fiddled while Rome was burning. These are not the times for royal parties, in search of excitement, to indulge in fun at the expense of the security of property, and in contravention to common sense. We expect to hear that Captain Shaw will be knighted, at least, for his superintendence of the evening's amusement.

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JARRAH JARRAH TIMBER.

ONE of the most important products of Western Australia, as regards constructive materials, is the jarrah jarrah wood or mahogany of those parts. The advantages of this timber are its great strength, hardness, and closeness of grain, combined with durability under exposure either to salt or fresh water. It is never attacked by white ants nor by the *teredo navalis*, which abound in tropical and semi-tropical seas, and this confers upon it an additional value. It somewhat resembles red gum in appearance, but the grain is darker, finer, and closer than that of the latter wood, and it is susceptible of a very high polish, which brings out a rich dark hue. It is invaluable to the Western Australians, who use it for ship-building, pier, and railway construction, as well as for the interiors of buildings and for furniture. In proof of its usefulness and durability in subaqueous operations, we may mention that three piles were drawn last year after having been in use for thirty years at the Perth Causeway Bridge over the Swan River, Western Australia. The piles, when drawn, appeared to be as sound as the day on which they were driven in, although they were half under water the whole of the time. A piece was sawn off the whole length of each of the three piles, one surface being polished and the other left rough, so that the soundness of the timber is apparent. The facts connected with these piles are vouched for by Mr. J. Manning, clerk of the works at Freemantle, Western Australia. In contrast to this may be mentioned the circumstance attending the use of three heavy sheer-legs of Baltic timber during the construction of the same bridge. The portions of these legs which were under water were completely riddled in the course of ten months by the *teredo navalis*, while the three jarrah piles do not show the slightest signs of insect ravages after thirty years' immersion in the same water. The immunity of this wood from the attacks of insects, whether land or marine, has been proved by analysis to be due to the presence of tannic acid in the wood.

Although this valuable wood has hitherto been but little known beyond the colonies, it will, according to *Van Nostrand's Magazine*, doubtless shortly come into more general use, as a company has been formed for supplying the market on a large scale. It was organised about two years since, under the title of the Western Australia Timber Company, and the Government ceded to it 320 square miles of jarrah jarrah, tooart, and karie timber country, with 2,000 additional acres of land for every mile of railway made by the company. The area selected by the company is about twelve miles from Geographic Bay, which lies to the north of Cape Leuwin. The works consist of a loading jetty, which was completed towards the close of last year in that bay; a line of railway twelve miles in length from the bay to the timber district, and mills for sawing the timber. The railway and the mills were very nearly completed when the last mails left Australia. The company anticipated being in full working order very soon, and they expect to be able to supply jarrah timber at the same price as charged for red gum—a greatly inferior timber. The company have works at Ballarat, where they have accumulated a large store of jarrah and tooart wood. This tooart wood is a species of white gum, and has a very close grain, is extremely hard, cannot be split, and is capable of enduring great heat without rending. The tooart wood has been suggested for use in gun carriages, on account of its non liability to split. Jarrah jarrah timber is being used by Government in the construction of military barracks in Ceylon, where it is supplied at little more than half the price charged for Indian teak.

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SUBURBAN RAILROADS—THEIR CONSTRUCTION AND OPERATION.*

AT the time when the various lines of railroad leading from New York into the interior were built, the principal object was to accommodate a mixed traffic of freight and passengers, carried over long distances; and the consolidation of lines stretching far westward, with the profit resulting from it, has made the short traffic of comparatively less importance as a source of income, under the present method of managing it. As the short traffic has gradually increased so as to require special trains, these have been merely duplicates of those used for long travel.

In reviewing the methods proposed as adapted to the requirements of this short traffic, prominence has lately been given to roads of narrow gauge, on account of their financial success in Wales, and also in some parts of the Continent of Europe. It is claimed that these roads are cheaper to build as well as more economical to operate.

The principal saving in cost of building such roads is made up as follows:—In the quantities of land required, and of excavation and embankment; in the use of shorter ties; and also the saving in cost of equipment; as such roads require light engines and cars. The saving in construction may be about as follows:—When a road has light cuts and fills of not more than 15,000 cubic yards to the mile, there will be about $\frac{1}{6}$th less earth to be moved. But this saving will be rapidly lessened when the cuttings are deeper than 6ft., the saving being only made in the road bed, which is only a small part of the excavation in deeper cuttings. In these the slopes furnish most of the material. These require the same amount of earth to be removed for a narrow bed as for a wide one, so that with any work, except that under 6ft. depth of cutting or height of embankment, the saving will be inconsiderable. The ties will be shorter by the difference between a 3ft. and a 4ft. $8\frac{1}{2}$in. gauge, which is the difference between the width of the two systems, the present one and that under consideration.

The above are the principal items in which any saving can be made, for cheap and light cars can be used on either gauge; but those on the present gauge will give more accommodation to passengers. With these slight advantages, there is the serious drawback that such roads, if they enter upon those now built, will require a third rail to be laid for their use. This objection will have force upon any lines to be laid near the large cities, though there may be exceptional cases where it does not apply. There being no advantages in the 3ft. gauge sufficient to recommend it in preference to that used at present, the various modes proposed for the accommodation of the short traffic on the present lines will now be considered. That one now adopted to a limited extent, using a car with engine in one end, is adapted to carry about eighty passengers, but is not suited to carry more, and to stop and start so often as is required; nor can they be reversed at the ends of the route without a turn-table, should it be desired to run the engine always ahead of the passengers. They were not considered suitable for the London Metropolitan line, which is the one that seems to have studied the adaptation of the cars suited to its traffic with care, because they did not supply sufficient power to get up speed as rapidly as required with frequent stops.

As nothing suited to the purpose of conducting the short traffic seems to be in use at present, it may be seen what is required, by an examination of the elements of cost of the present trains in detail. A train to carry 100 passengers consists of the engine and tender of 25 tons, a baggage-car and two long cars, amounting in all to 77 tons, including the weight of 100 passengers, or to 1,550lbs. for each person carried. The long cars have more than 600lbs. weight for each person carried.

The attendants, with their wages by the day, are an engineer at 3.48 dols., a fireman at 2.25 dols., a conductor at 3.88 dols., a baggage-man at 2.24 dols., and three breakmen at 5 dols., or a total expense by the day of 17.07 dols. Besides this, the cost by the mile run is as follows:—Fuel, 0.079 dols, oil and grease, 0.13 dols., engine repairs, 0.13 dols., car repairs, 0.10 dols., being a total expense by the mile of $33\frac{1}{3}$ cents. It will be seen by the above that the dead weight hauled per passenger is very great, and this requires an unnecessary outlay for attendance and also for hauling. If the dead weight per passenger can be reduced, a proportionate saving of labour and fuel and oil can also be made.

With these ends in view, the following plan is now suggested, for local traffic of passengers residing not more than twenty miles from the city, a distance about equivalent to one hour's ride in the horse cars up town.

The cars proposed are to be a compromise between the horse and the rail cars. They are to carry the passengers, seated as now in the long cars, on seats for two at the side of the car, with a middle passage and end doors. With seats $2\frac{1}{2}$ft. apart, a car will carry forty passengers, if made 25ft. long. These cars are to be set on axles with as wide a base as the curvature of the road will permit, but with little overhang at the ends; and should be fastened together by spring couplers so as to have the train move as one mass. In other respects, they would be modelled like the horse cars. These weigh about two tons, and carry safely more than twice the number they can seat. By allowing a ton additional for the framing and bracing of the proposed car, it would then weigh three tons, for forty persons. Assuming now that 200 persons are to be carried, five cars and their load will weigh 30 tons. The engine for such a weight may be lightened, and not exceed 10 tons. It should be made to run either end foremost, so as to make no delay at the end of the route by going on a turn-table, but merely switch off, and back to its place at the head of the train, in the direction of the next run. Requiring but little fuel and water for its light load, the tank can be put on the engine frame near to the ground. A train made up in this manner will have great stability, the water and passengers being about 2ft. nearer the ground than at present.

The total weight will be 40 tons, with power and adhesion sufficient to stop and start quickly, and it will move steadily, since the cars are bound tightly together, and they also have a low centre of gravity. With the same expenses per ton moved as those of the train mentioned above, and assuming that 10 trips can be made in 16 hours, the cost of a 20 mile run will be 1.15 dols. for attendance, and 3.32 dols. for fuel, oil, and repairs, or a total of 4.47 dols. per trip, with a capacity to carry 125 passengers through the whole length of the trip. Starting from the city with 200 persons, and leaving part of the load at every station, will give that number as the average through 20 miles. The actual cost of carrying one passenger 20 miles will be 3 4-10 cents for train expenses. This is rather less than the rate at which it is stated that cheap passenger trains are now run ten miles out of London, which is given as 25 cents per week, or $4\frac{1}{4}$ cents for 20 miles.

Should a part of this saving over present rates be attained, the accessibility, and also with this the value of city suburbs, would be so much increased, to the mutual interest of land-owners and railroads, that even suggestions of what may be done will not be out of place, as calling attention to the subject.

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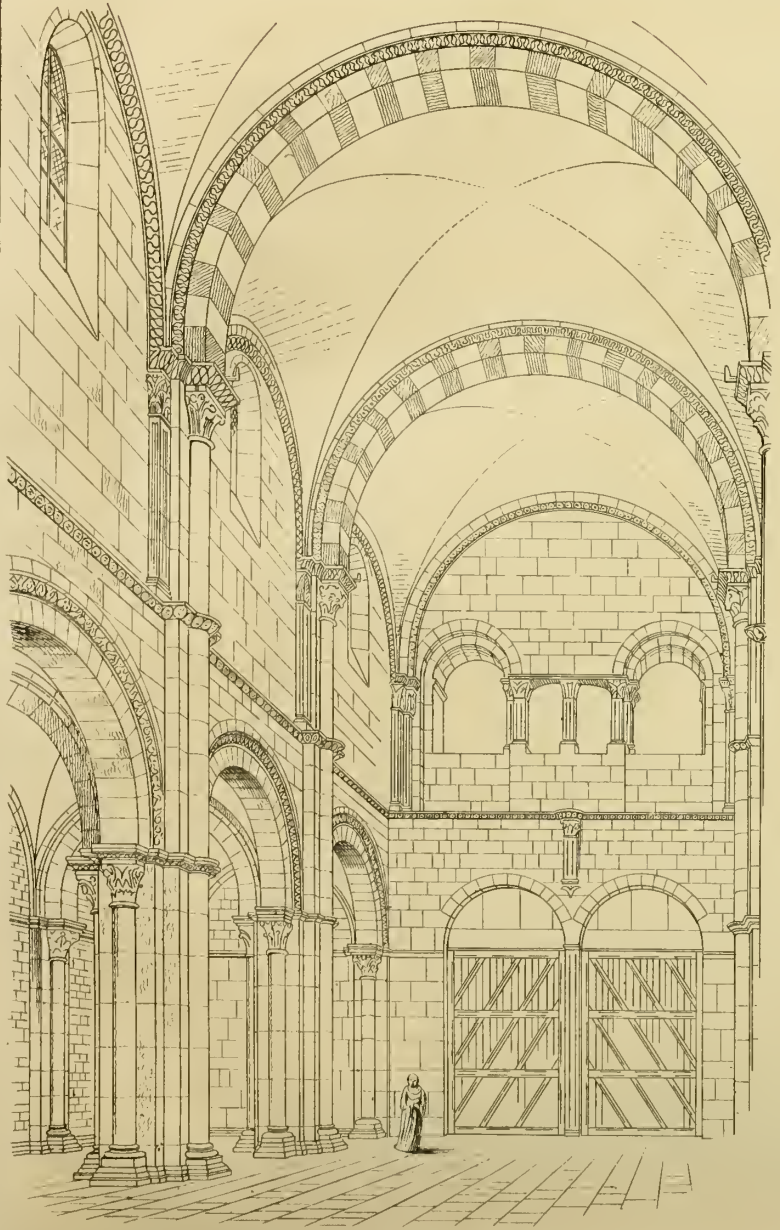
* By T. McDonough, in *Van Nostrand's Magazine*.

DETAILS.

FROM VIOLLET-LE-DUC.

DICTIONNAIRE RAISONNÉ L'ARCHITECTURE.

19.



VÉZELAY.

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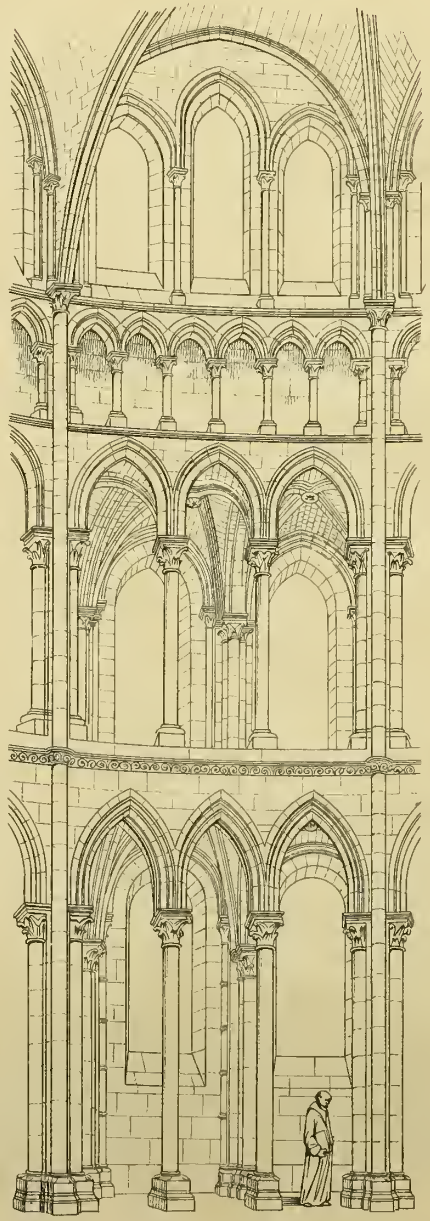
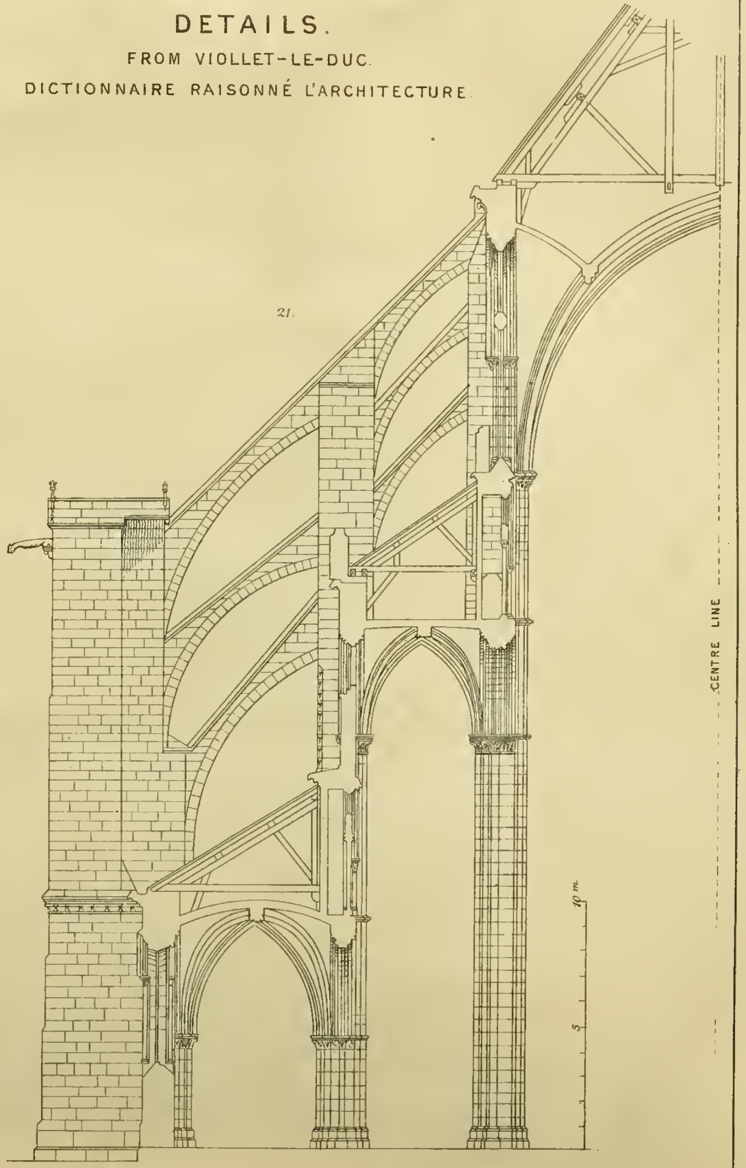


SOISSONS.

21.



BOURGES.

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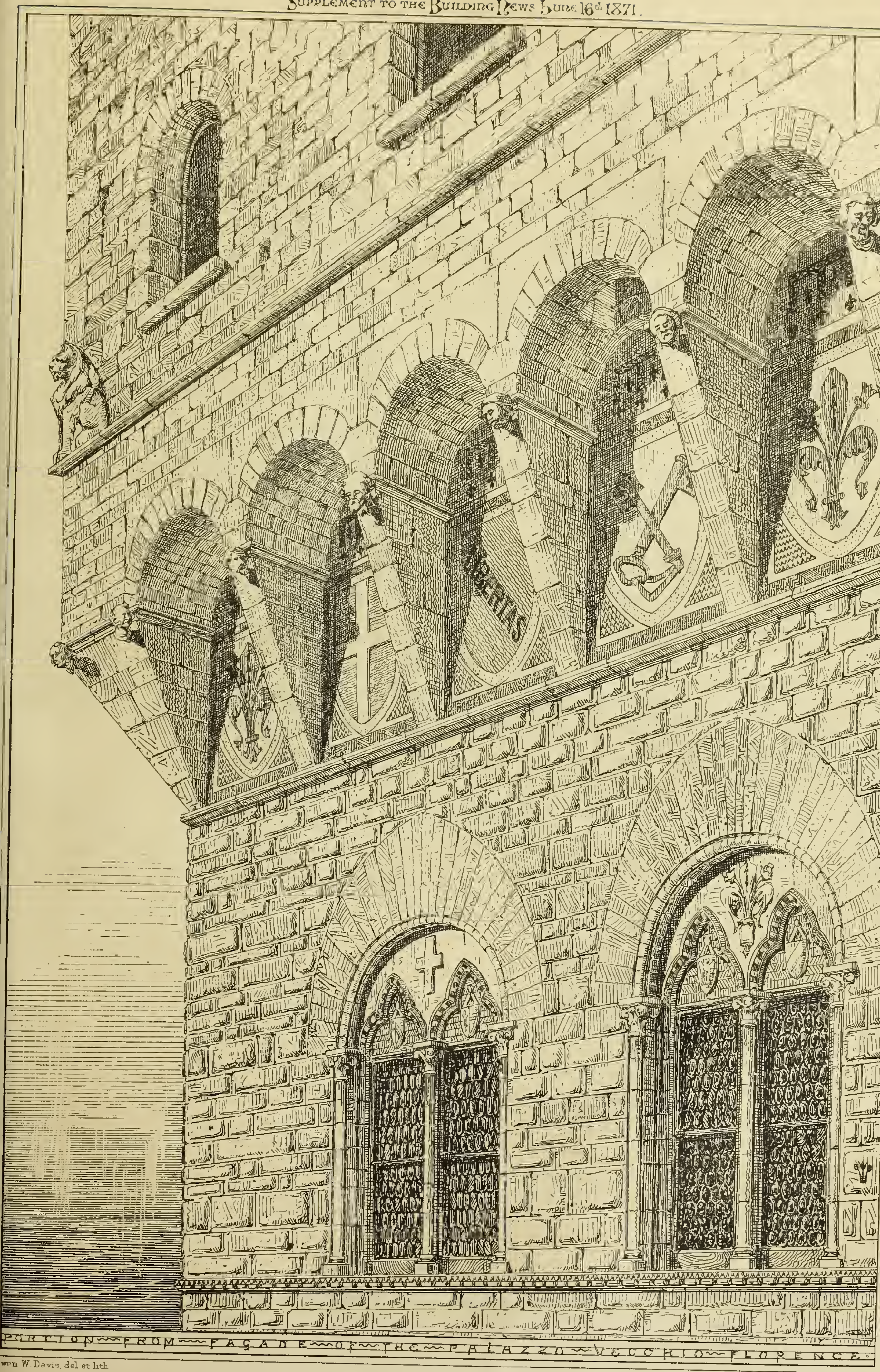

PORTION FROM FAÇADE OF THE PALAZZO VECCHIO FLORENCE.

Owen W. Davis. del et lith

Printed by Whiteman & Bass.

THE PALAZZO VECCHIO, FLORENCE.

MANY of our readers are familiar with the Palazzo dei Signori, a portion of the back façade of which interesting edifice we have chosen this week for one of our illustrations. It is built in the Piazza della Signoria, the centre of the traffic of Florence, and was once the seat of the Republican Government, and subsequently the palace of Cosimo I. The foundation was laid in 1298 by Arnolfo di Lapo, or Cambio, but the building was afterwards much altered, and the well-known campanile added thereto. The lions occupying the niches in the four angles of the attic were placed there about the middle of the fourteenth century, but were subsequently removed, and the recesses filled up. There are old engravings extant representing these niches; indeed, their outline was plainly observable with a glass, but we believe the building has been very recently restored. Here are preserved the statues of David and others, by Michael Angelo, as also the frescoes in the Great Hall, by Vasari, illustrative of Florence and the great Medici family. O. W. D.

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SAVED FROM THE WRECK.

MR. JOHN LEIGHTON, in a letter to the *Times* under this heading, says:—

Compared with other losses the Tuileries is hardly deplored, though it contained enough to make the reputation of a town. The Pavillon de l'Horloge, the work of Pbilibert Delorme, was a masterpiece, and contained the Salle des Maréchaux; and as a monument of the period the saloon of Louis XIV. was without rival.

As a work of the Renaissance the Hôtel de Ville is a great loss, its calcined walls being a mass of lime. With it perished that great work of Ingres, "The Apotheosis of Napoleon," and a salle decorated by Delacroix; also works by Lehmann, Benouville, and Cabanel; some landscapes by Hub. Robert, and an unique collection of all the original sketches of works executed for the city of Paris. The Conseil d'Etat is burnt, and with it the painted staircase of Cbasserian and the *chef d'œuvre de Guerdon*.

The Palais de Justice is destroyed—that is to say, the part constructed by M. Duc, the design-great prize of 100,000f., 1869.

Of private collections, that of M. Catteaux, of the Institute, at the corner of the Rue de Lille, is no more—a national loss, for it was bequeathed to the State, and contained works by Michael Angelo, Raphael, &c., and M. Ingres; the house of M. Tbiers, it is well known, was destroyed by order of the Commune, and its contents dispersed, but whether they perished in the conflagration of the Tuileries, or still exist in the Garde Meuble, is uncertain. It was strong in Florentine bronzes, books, and historical works.

Of stained glass, that in the Orleans Chapel, by Ingres, is saved, and the remarkable twelfth century window at S. Denis, containing the oldest portrait known—that of the Abbé Suger, was safe in the vaults of the Cathedral prior to the Prussian occupation.

The Musée of the Luxembourg is safe (and all the statues in the garden intact), having passed through the siege and powder explosion that unroofed a portion and destroyed the windows of the Palace.

The Arc de Triomph has been damaged, and particularly the bas-reliefs of M. Etax. The grand work of Rude is uninjured. In the Place de la Concorde the horses of Marley still rear their heads. The obelisk of Luxor is untouched, and all the statues whole, save that of Lille and one of the fountains—things easily replaced. More so than the great work of "Erostrate" Courbet, artist, iconoclast, and member of the Commune, whose Column Vendôme still chokes the way.

The Palace of the Legion d'Honneur has gone, and with it the archives of authority to bear a *bouton rouge.* The office of the Minister of Finance is razed to the earth, but the Account Public (the Grand Livre) is rescued.

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EXETER CATHEDRAL A CENTURY AGO.

THE "Murray's Handbook" of a century back seems to have been four small octavo volumes, entitled "A Tour Through the Whole Island of Great Britain." The book was, on its own statement, "originally begun by the celebrated Daniel De Foe, continued by the late Mr. Richardson, author of 'Clarissa,' and brought down to the present Time [1769] by a Gentleman of Eminence in the Literary World." Who this "gentleman of eminence" was we have no means of knowing; nor have we any particulars given as to the respective shares taken in the work by the persons named. Of course, in the "Tour Through Devon," Exeter and its Cathedral receive prominent notice, and some remarks as to the screen possess an interest for us at the present time, taken in connection with the recent controversy on the subject. Our tourist found the Lady Chapel "fitted up for a Library, and furnished with a pretty large Number of Books (which are but of little Use, because placed in a very confused Order)." The three seats, or alcoves, on the south side of the high Altar are mentioned for the purpose of recording that Bishop Leofricus was installed in the middle seat about the year 1050, by King Edward the Confessor and his Queen Edyth. It is noted that the Chapter House is "handsomely gilded on the Top;" and then follows a curious account of the Altar-piece, "done upwards of 100 years ago, and is a Representation of the Inside of the Church in Perspective, an exquisitely fine Piece of Painting, and (excepting only a little Injury it received from the Swords of the Saints Militant in the Civil Wars) exceedingly well preserved." This picture has (according to a local journal) disappeared from the altar. Is it still preserved? The destruction of the fine painted glass of the Cathedral by the Puritans, and the expenditure of their rage upon the carved figures of the patriarchs, prophets, kings, &c., "of which there are a great many," are duly chronicled. Of the figures it is remarked: "There the maimed Bodies are now to be seen, some without their Heads, others have lost one or both Legs, or Arms, &c., all of them some way or other mangled." Then comes a note that seems to have a special bearing upon the controversy that has been waged in the present day concerning the division of the choir and nave:—"And having by this means taken away what they feared would lead them into Idolatry, *they* divided this Cathedral by a Partition-wall betwixt the Choir and the main Body of it, one of which Divisions was made Use of by an Independent, and the other by a Presbyterian Congregation." Immediately after, the whereabouts of this partition-wall is specified, in the sentence: "An Organ of very good Workmanship, and supported by a Tetrastyle of beautiful Gothic Columns, stands where the before-mentioned Partition-wall did." This is directly in the teeth of the opinion of to-day. Mr. Gilbert Scott asserts that the dividing-screen is part and parcel of the original structure. The Nave was at that time fitted up, for commendatory notice is given of the "well-furnished Alcove of wooden Work for the Bishop, and the Pulpit, and Pews of the like, in the Nave or Body of the Church, together with the neat Marble Font, and the two Suits of Hangings for the Choir, one of Tapestry and the other of Velvet, and the fine suit of gilt plate for the Communion Service." This "Alcove" is not meant for the Bishop's Throne in the Choir, for that is previously described.

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INCREASING THE HEIGHT OF ROOMS.

IT is frequently desirable, says the *Technologist*, an American paper, to raise the roof of a dwelling-house a few feet higher than it was originally built, for the purpose of making sleeping-rooms in the attic story, or to render rooms that are quite too low more pleasant and airy. But many builders dare not attempt such a job, unless they take the roof entirely down, for fear that they may get a dead-fall trap on stilts, when they have lifted the roof from its original foundation. It will be found a comparatively easy job to raise the roof of any ordinary building one foot, or six feet, with perfect safety, provided a workman will operate understandingly. Let us assume, for example, that it is desired to raise the entire roof of a dwelling-house, or the roof of one wing, which is thirty feet long and twenty feet wide. If the lower ends of the rafters rest on plates six inches square, or larger, it will be better to elevate the plates with the roof by cutting openings through the side walls about six feet from each end, to receive sticks of timber extending across the building beneath the plates. If the building has been erected with a balloon frame, there should be three sticks of square timber, one near each end, and one near the middle. Let these timbers be blocked up close to the underside of the plates. The ends of these sticks need not extend beyond the outside of the plates, so as to interfere with the cornice. If there are no collar leaves secured to the rafters, the plates must be fastened, temporarily, to the timbers, to prevent their spreading as soon as the roof is lifted. The next step will be to set a screw near the end of each stick of timber, on a foundation that will not topple nor sway as soon as it receives the superincumbent pressure of the roof. If strong iron jack screws cannot be obtained conveniently, three two-inch wooden bench screws will elevate one side of a large or small roof with perfect safety. The writer has frequently lifted one corner of a thirty by forty feet barn with a pair of two and one-eighth inch wooden screws. As soon as the timbers are secured in their proper places, and the screws are set to lift one side, remove a board just below the cornice, and saw off all the studs on both sides of the building. Let all the studs at the gable end be sawn in two at a point nearly in a horizontal line with the plates, and let the gable end walls and window rise bodily with the roof. Now, let the screws be all worked together, blocking up every inch as fast as the roof rises. After one side has been elevated six inches, remove the screws to the opposite side, and elevate it about one foot, keeping the timbers beneath the plates and well blocked, as fast as the roof rises.

In case there should be a chimney resting on a closet, or on the collar beams supported by a partition, procure another wooden screw, and set it beneath the chimney. Four wooden screws will usually cost no more than the proprietors of jack screws are accustomed to charge for the use of a set of screws while performing such a job. If the screws are placed on the foundation so as to elevate the roof perpendicularly, by raising one side six inches, then the opposite side one foot, and after this, lifting each side alternately one foot, there will be no difficulty in carrying up the roof in a perpendicular direction, to any desired height, provided the screws and the blocking are supported by a broad foundation of blocks that will not rock. Before removing the screws, see that the blocking is so secure that the roof cannot slip, in case the screws are not set perpendicularly on the opposite side. As the roof is lifted, let a plumb line be frequently employed to determine whether it is not being carried in any direction away from a perpendicular line. In case the entire roof is one inch, or more, too far to the north, let the north side be lifted one foot higher than the opposite side and be blocked up; then set the screws under the opposite side inclining about one inch per foot in height. By this means, the roof can be carried in any desired direction, the distance of half an inch or two inches. If the screws are always set perpendicularly, the roof will rise in the right direction. If, for example, the plates beneath the roof to be raised were four feet from the chamber floor, in lieu of square blocks, make a strong platform for each screw to rest on, by placing four pieces of scantling, two feet long, on the ends, for corner posts, and nailing stays from the top of one to the lower end of another. Then, let the scantling stand on strong planks resting on the floor. A crib can then be carried up, on the tops of the corner posts, with pieces of plank, or studs or boards, and the foundation will not topple. As soon as the roof has been elevated to the desired height on one side, let the space in the side wall be filled by nailing pieces of studs to the sides of the pieces attached to the plates, and the sides of the studs beneath. Then, lift the opposite side of the roof, and secure pieces of studs to the sides of any timbers that have been sawn in two. If studs, when lapped together, be nailed firmly, the side wall will be about as strong as if the studs were of one entire piece of timber. Should there be partitions extending from the floor to the roof, tear away the base boards and saw off the studs near the floor; and let another screw be employed to carry up such portions of the structure, or let a self-acting lever, with a weight at the farther end, hold the partition wall up to the desired position as the roof is rising.

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COMPETITIONS.

Tunbridge Wells Cemetery.—Designs submitted by Mr. Stephens, of Maidstone, were selected.

Salford Union Workhouse.—The competition for the extension of the Salford Union Workhouse, by the erection of new buildings, to accommodate 500 children, has resulted in the selection of the designs by Messrs. Medland and Henry Taylor, architects, of Manchester.

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Gloucester School of Art.—There was a demonstration at Gloucester on Saturday week, on the occasion of laying the foundation-stone of a building, to cost £5,000, to serve the purposes of schools of art and science and a museum. A school of art has long existed in the city, and, under the able guidance of Mr. Gambier Parry, has proved very successful. A museum also has been conducted in rooms lent for the purpose by Mr. Sydney Dobell. But the building used for the school of art is utterly inadequate, and it has long been desired that there shall be within one space worthy means for general instruction. The result of years of effort and advocacy has been that, including the Government grant of £850, there is now in hand more than £4,000 of the £5,000 needed.

Building Intelligence.

CHURCHES AND CHAPELS.

Bodmin.—A new Congregational chapel (Lady Huntingdon's Connection) was opened at Bodmin on Tuesday week. The chapel, including a schoolroom in the basement, has been erected, at a cost of upwards of £2,000, from plans and specifications (gratuitously supplied) by Mr. C. Goodyear, architect, formerly of Bodmin, but now of London. The various contractors were: Masonry, Mr. Nicholls; woodwork, Mr. Oliver; heating and glazing by Messrs. Garland & Son; gasfitting by Mr. Thomas, (all of Bodmin); the Bath stone windows, and ornamental stonework were executed by Mr. Nicholls, of Liskeard.

Bosbury.—The church of the Holy Trinity, Bosbury, Hereford, a somewhat interesting example of twelfth century work, was reopened on Tuesday week, after restoration. The church consists of nave, chancel, two aisles, and organ chamber. The chancel has been both internally and externally renovated. There is a new roof, of the ancient pitch, covered with Broseley tiles, with Bridgwater crest; the east wall, with the exception of the pillars, has been rebuilt, and the windows restored. The porch has been carefully and completely renovated, as has also the ancient Grange chapel. The top and base of the pulpit are new, the former being of oak, the latter of stone, the richly carved panels of the old pulpit being inserted.

Charlton Kings.—The new church of the Holy Apostles, Charlton Kings, Cheltenham, was opened on Monday week. The church is built in the Geometrical Decorated style, and consists of a nave, 82ft. by 25ft., and 45ft high; with side aisles of similar length, 12ft. wide. The chancel is 40ft. by 21ft. with an apsidal termination, and is lighted by five two-light windows. There are also north and south chancel aisles. The chancel is divided into two parts by a sanctuary arch over the altar rails, which is also supported by marble columns, two on each side, resting on corbels of groups of angels playing on musical instruments. The roofs of the nave and aisles are boarded, forming panels, which, together with the ribs, are relieved by coloured decoration. Between the arches of the nave are twelve three-quarter figures of the Apostles, enclosed in circles. There is an entire absence of plastering throughout the interior of the church, the whole being lined with Bath stone, the chancel and chancel-arch being made more striking than the other parts by the introduction of blue Forest stone. The west window is filled with stained glass, executed by Messrs. Hardman. The building has been erected from the designs of Mr. J. Middleton, of Cheltenham. The contract for the works has been carried out by Mr. W. Jones, builder, of Gloucester. The carving has been executed by Mr. Boulton, Cheltenham. The church has cost about £7,000; and provides sittings for 900 persons.

Fosdyke.—The church of All Saints, Fosdyke, Lincolnshire, was reopened after restoration on Tuesday week. This is the third church known on this site. The first was an Early English structure, built of Barnack-stone, but being destroyed by fire in the reign of George II., it was succeeded by a brick building of a very poor appearance. The present structure was designed by Mr. Browning, of Stamford, and built by Mr. Pattison, of Ruskington. It is built of small red bricks and Bath stone dressings, the old Barnack stone which remained from the first church, being used in the construction of the larger portion of the walls. It consists of a nave, with clerestory, north and south aisles, chancel, vestry, tower, and spire. The style is Early English. Within, the aisle arcades, of five bays each, are supported by circular shafted pillars, having foliated caps. The clerestory consists of cusped circlets, and the nave roof is supported by Mansfield shaftlets, giving variety to the colouring of the stone work.

Franche.—The new church dedicated to S. Barnabas was consecrated at Franche, near Kidderminster, on Saturday last. Messrs. Chamberlain and Martin, of Birmingham, were the architects, and Mr. Richard Thompson, of Kidderminster, the builder. The church, which is in the Early Decorated style, is built of red brick, faced with stone. The west window consists of three large lights, which present a handsome appearance. The windows at the east are lancets, and are surmounted by another light somewhat of a medallion form.

Greenock.—On Sunday a new church built for the Free Middle Congregation, Greenock, was opened. The building, including the spire, has cost about £16,000, and is of antique Grecian architecture, from designs by Messrs. Salmon, Sons, & Ritchie, Glasgow. The spire is 200ft. 9in. in height, and is the highest in Greenock by 13ft.

Gunwalloe.—On the eastern side of Mount's Bay, Cornwall, nestling snugly behind a huge cliff, and protected on all sides by high lands, with its foundation above high water mark, stands Gunwalloe Church, which was re-opened on Monday week. The sacred edifice is one of the oldest churches in Cornwall, and its peculiar situation has been assigned to various causes, the one generally believed being that it was erected by some wealthy person who was wrecked on the terrible coast adjacents in gratitude to God for saving his life. The tower is detached from the main building, owing, says legendary lore, to the fact that two sisters, who had been rescued from shipwreck, and who desired to build a house for the worship of God, could not agree as to the site, and they settled the dispute by one choosing a spot for the tower and the other the place on which to erect the main building. Last year the incumbent, the Rev. M. N. Brougham, proposed the restoration of the building. Sufficient money was soon raised to enable him to proceed with his project, and Mr. Sedding, architect, of Penzance, prepared the plans. In August last Mr. Bone, builder, of Liskeard, commenced the work. The chancel has been rebuilt, a new roof has been placed on the church, the old woodwork being worked in at the south aisle. The cost has been about £530.

Harswell.—The church of Harswell, near Market Weighton, has been rebuilt and reopened. The church had originally been of Norman structure, and in the edifice recently taken down extensive fragments of good Norman work were found. The carved corbels which formed a prominent part of the original church had been used as ordinary wall stones, or as coigns at the west end of the church. The chancel had also been built in the debased age, when little or no regard was paid to correct architecture. In the erection of the new walls great care was used. Nearly the whole of the corbels are again introduced, as they doubtless appeared in the original Norman Church, and other Norman masonry has been carefully reintroduced and refixed. The windows have been constructed in the same style as the ancient doorway. A new porch has been added on the south side, and a new vestry on the north. The roof is covered with red flat tiles. supported on an open-timbered roof. The works have been designed and carried out under the direction of Mr. James Fowler, of Louth, architect, by Messrs. Simpson and Malone, of Huddersfield.

Icomb.—The parish church of Icomb, Oxon, was reopened on Whitsun-Tuesday, after restoration under the direction of Mr. Hopkins, of Worcester. The church, which was originally built about the beginning of the thirteenth century, consists of chancel, nave, south transeptal chantry, and western tower. The chancel is a good specimen of Early English work. The total cost of the work was £800. Messrs. Warr and Woolgrove, of Little Tew, near Eustone, Oxon, were the builders. The Milton and Forest stone was used. In the nave the modern and dilapidated roof has been removed, and a new ribbed barrel roof substituted. The interior of the roof of the Blaket Chapel has also had the plaster and whitewash removed, and its original form restored, panelled, and ribbed. Both these roofs have bosses at their intersections, well carved by Boulton, of Cheltenham. The arch in the Blaket Chapel has been entirely rebuilt. The modern porch has been removed, and the Early English design carefully restored from existing fragments. All the stonework of the church generally has been made good, and the old seats and fittings swept away, giving place to oak stalls in the chancel and open deal benches in the nave.

S. Mary-le-Wigford, Lincoln.—The restoration of this interesting church, to which we have before referred in these pages, has been entrusted to Mr. Pearson, and the works will be commenced at once. We congratulate the committee upon their resolution; the work cannot be in better hands. Mr. H. K. Hebb, of Lincoln, has offered to provide two memorial windows for the church in memory of his parents, and his offer has been accepted by the committee.

Talsarnau.—A new church has been opened at Talsarnan, Carnarvon. The building is a parallelogram on plan, with a semi-octagonal apse at the east end. The roof is open to the ridge, and ceiled between the rafters. The sacrarium floor is laid with tesselated pavement. Over the altar is a tile reredos, with a white marble carved panel in the centre, the work of Mr. Evans, Whitchurch. The walls are of stone obtained near Penrhyudeudraeth, with Cefn stone dressings. The architect is Mr. Spaull, of Oswestry.

Wallsend.—The foundation-stone of a building which is to serve the combined purposes of a Primitive Methodist Chapel and a Temperance Hall was laid at Wallsend, near Newcastle-on-Tyne, on Whit Monday. The chapel measures 51ft. by 36ft. The style is Early Gothic, the materials used being pressed red brick, with stone dressings. The Temperance Hall occupies the basement beneath the chapel. There are distinct entrances to both chapel and hall. Special provisions have been made for lighting and ventilation. The building has been designed by Mr. Thomas Parker, architect, of Newcastle. The estimated cost is £1,400.

BUILDINGS.

Bishopton.—New schools in connection with S. Michael's Church have been opened at Bishopton, near Bristol, arranged for the accommodation of 100 children. The school-room is 40ft. long and 18ft. wide, light and airy, having Gothic traceried windows at each end; a class-room 18ft. long and 14ft. wide, communicating with the school-room by folding doors; a smaller class-room, 11ft. square, all approached by a good porch. The roofs are of open timber work, stained and varnished, covered with slates, and have an ornamental bell-cot. The walls are to be built of Pennant stone, with freestone dressings. The cost of erection will be £600; the designs were prepared by Mr. J. A. Clark; and Mr. J. Stephens is the contractor for the works.

Blackburn.—On Saturday last the foundation-stone of new schools in connection with the Church of England for S. Peter's parish, Blackburn, was laid. The building will accommodate 550 scholars, and is estimated to cost £2,600. The architect is Mr. Joseph Brierley, Blackburn; and the builders Messrs. Lewis and Gudgeon.

Bradford.—On Saturday afternoon, the ceremony of laying the foundation-stone of S. Peter's Catholic Schools, Bradford, was performed. The building will be two storeys in height, and measure 58ft. by 19ft., with two class-rooms. The style adopted is a free rendering of the Domestic Gothic of the plainest possible character. Accommodation will be provided for 291 children, and the cost is about £700. The work is executed from designs by Mr. E. Simpson, Tyrrel-street.

Bradford.—On Saturday last the foundation-stone of the new Church Literary Institute was laid at Bradford. The ground-floor is designed for a spacious reading-room and library, 42ft. by 41ft., and 19ft. high. On the first floor is the Lecture Hall, 50ft. long by 43ft. wide and 26ft. high, seating 550. A commodious gymnasium has been provided on the basement 50ft. long by 60ft. high. The elevation is divided into five bays. On the ground-floor the end bays are devoted to the entrances, and are ornamented and decorated. The style of the building is French Gothic. Messrs. Andrews and Pepper are the architects.

Epsom.—The new Cemetery was consecrated last week by the Bishop of Winchester, assisted by the clergy of the neighbourhood. The new cemetery is pleasantly situated on the hill between the town and the racecourse, and is enclosed by a Kentish ragstone wall, surmounted by a dwarf wrought iron railing porch. In the centre of the ground are two detached chapels—viz., Episcopal and Dissenters. The former consisting of nave and chancel, with a round tower and an open timber porch, the latter being simply a nave with an octagonal east end and a square tower over the porch; the upper part of this tower is constructed of timber, in which turning is largely introduced. The whole of the buildings are Early English in style, and, although there is great variety in the detail, there being scarcely two windows of the same design, the work is of a simple character, and more picturesque than elaborate, and reminds one of some of the old Sussex churches of which Mr. Young has published sketches. The work has been carried out in a most satisfactory manner by Nye, builder, of Ealing, from the designs and under the direction of Messrs. Shaw and Young, architects, of Exeter Hall, Strand, and Crooked-lane, City, whose designs were selected in a limited competition. Mr. R. Edwards was the clerk of works.

Reading.—The Corporation are about to erect new public offices on the site of S. Lawrence's Vicarage, adjoining the Town Hall. The buildings will cost about £3,000, and the plans, which were submitted to the Town Council on Tuesday week, have been prepared by Mr. W. H. Woodman, the borough surveyor.

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The Bishop of Worcester, in the course of a visitation charge on Tuesday week, said he had consecrated twenty-three new churches in his diocese in the last three years. The same period had also witnessed the completion of the repair and enlargement of a large number of other churches.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

Received.—E. L., G. & B., L. Son & Co., C. F, C., C. B. A., J. H. T., W. & Son, J. H., J. V.

Plebs.—Your query is an advertisement.

J. M. B.—We do not know the address.

J. B. N.—Look again. The advertisement did appear.

C. N.—The "Sketch-book" will be ready in a few days.

Correspondence.

CHRIST CHURCH CATHEDRAL, DUBLIN.

To the Editor of the Building News.

Sir,—In the Building News of 26th May, although you quote largely from Mr. Street's report, and give illustrations of the proposed additions about to be carried out in the restoration of Christ Church Cathedral, Dublin, you do not give an opinion as to the desirability or otherwise of his plans. Will you permit me to offer some remarks on what you so justly designate "an important work?" As regards the restoration and rebuilding, I have nothing to say. There is no living architect better qualified than Mr. Street to restore the grand old building to its original form. As a *quondam* citizen of Dublin, however, familiarly acquainted with the site, I must energetically protest against the carrying out of one portion of his design. By referring to the plan given in your paper, it will be seen that Mr. Street proposes to build the new Synod Hall on the western portion of the ground, where it will form one side of a courtyard, the other side of which would be made up by the part of the southern nave not built against and the new buildings connected with the hall, the result of which will be, of course, to shut out the view of the nave altogether from this side; and although Mr. Street seems to think, because that portion of the work will be new, it does not matter, I don't think he will find many Dublin people to agree with him. Why spend a large sum of money on a work, and then deliberately shut it out from public view? No doubt it is urged by the architect that buildings connected with the cathedral once stood on the ground where it is proposed to erect the new Synod Hall; but these buildings formed the residence of the monks, to the cloisters of which, at all events, it is reasonable to suppose the people had free access. Indeed, it seems scarcely possible to doubt that the cathedral itself, as well as the conventual buildings around, were "familiar as household words" to the whole population of Dublin in the middle ages; but if this portion of the design is carried out how many of the present inhabitants will ever enter the courtyard which the new buildings will create? Formerly, too, the citizens were all of one faith, and all knelt at the same shrine; now the religion of the majority renders a knowledge of the interior an impossible thing to most of them. They can visit it, of course, but it is only by long-continued, familiar intercourse that such a building becomes to us a "thing of beauty and a joy for ever." Is it right, then, that so large a number of the people of Dublin, already shut out from the interior by circumstances which we may regret, but cannot ignore, should be debarred also from seeing the outside of a fane which they look upon with reverence and respect? Christ Church Cathedral was bequeathed to us by the common fathers of Protestants and Catholics alike, and no section of the people should be prevented from seeing its architectural beauties fully developed, as no doubt they will be. I trust, therefore, that Mr. Street will reconsider this portion of his plan, and that the buildings for the General Synod will not be erected in the position at present proposed.—I am, &c.,

A Synodsman of the Irish Church.

SCOTT v. SCOTT.

Sir,—Your correspondent "C. E." last week, in his statement as to the cause of, and the remedy for, the echoing proclivities of the Albert Hall, expresses it appears to me, sound opinions. I cannot but echo them. The cost, however, of the alteration he suggests would be, if nothing else was, an insuperable barrier, I fear, to its being carried into effect. Colonel Scott, it is said, has a much cheaper device all ready, "cut and dried," so to speak—namely, the *starching and ironing* of that baggy sheet dignified as a velarium. Do not suppose I am speaking ironically. It is a fact, and a great fact. A glorious vaunt, no doubt, it will be for the ubiquitous "Glenfield" against "Stiff" opposition. We may expect evermore this velarium crammed down our throats as the greatest laundry achievement of this age of wonders. The Building News will probably have, "To Architects, Builders, &c.—When you ask for Glenfield Starch, as used in the Royal Engineers' Laundry, see that you get it. The only certain remedy for the acoustic defects of Music Halls, Churches, &c."

"C. E." appears to think the hall is not high enough! It is quite sufficiently so, I can tell him, for most people; whilst its present huge size as regards its mate on the other side of the road is a material disadvantage. Of all unfortunate, ill-considered conjunctions, nothing could be worse than the propinquity of the Albert Hall to the Albert Memorial, buildings of such strongly contrasting shape and character. If the two Scotts had been blood relations, instead of only namesakes, they could not have done themselves greater mutual injury! The one building, by contrast, becomes more squat and heavy; the other attenuated and insignificant. The lavish and costly elaboration of the details of the Memorial is only known to those who, like the writer, inspected the work from the scaffolding. All is lost to the general observer below. It only too strongly illustrates the early bias of the leading art workman's mind as a goldsmith. The multifarious stone-setting, chasing, enamelling, and gilding constitutes it as less an architectural work than a gigantic jewel—in vulgar parlance, "a gilt gimcrack." The Prince's Memorial, no doubt, is wished to be—who would not wish it?—immemorial. But it has been entirely forgotten that permanence in aggregate matter is only gained by rigid simplicity of construction. This monument, I am sorry to say, is, both in general construction and detail, so composite, its long durability is not probable.—I am, &c., M.

MANCHESTER.

Sir,—In your article on the cotton capital you say there is "little stucco used there." In truth, there is none. It is a notable and praiseworthy municipal law, worthy of imitation elsewhere, that stone dressings only are allowed. Cement is not tolerated. With regard to the Assize Courts, I beg to say that the success of the architect, in respect of this building, was not owing to its external features, but its excellent internal arrangements. Our courts of justice (of *in*justice in this respect) are so generally contemptible—so utterly bad in all requisite qualifications—that the improvements conspicuous in these Manchester courts were hailed with acclamation, and the "gentlemen of the bar," for once, did in truth that which by a pleasant fiction they are always supposed to do—rendered their able advocacy without fee or reward. The cleverness of the architect was bruited all over the kingdom, and *thus* the tide of favour rose which has so rapidly led him on to fortune.—I am, &c., P. E. M.

"CONDESCEND TO MEN OF LOW ESTATE."

Sir,—It has hitherto been the custom, and a good custom too, of the Horticultural Society to commemorate the birthday of the late Prince Consort by a free admission to the public. It is to be hoped that this year the practice will be maintained with the addition of equal freedom to the International Exhibition. If mere pecuniary profit or the affording a pleasant lounge to the upper classes be the intention of her Majesty's Commissioners, they no doubt should keep strictly to the shilling payment. But if the education and moral improvement of the masses are within the scope of the Commissioners' views—and if they would truly carry out the wishes and feelings of the late Prince they must be—they should open their hands and deal liberally. There ought to be, it appears to me, workmen's days, when their admission should be free or by a very low payment, and for similar reasons young people should on all days be admitted at half price.—I am, &c.,

P. E. M.

STAINED GLASS AT THE INTERNATIONAL EXHIBITION.

Sir,—In your article on the stained glass at South Kensington, you wish to be favoured with the name of the artist who designed the domestic stained glass window exhibited by us in the central opening on the south-west staircase.

The name of the designer, Mr. B. J. Talbert, was given by us in our return for the catalogue entry, but why it was not printed is more than we can tell. The catalogue is full of blunders. In several entries the names of our workmen to whom the Society of Arts awarded prizes for good metal work are put down as the artists, and our own names entirely omitted.—We are, &c., Cox & Son.

28 and 29, Southampton-street, Strand.
June 14, 1871.

THE PEABODY FUND.

Sir,—May I ask, through the medium of your columns, what has become of the Peabody Fund? It is very generally asserted that not one-half of the amount left by the generous-hearted American has, as yet, been expended on its intended purposes. How far is this assertion true?

No one for a single moment would imagine that any impure motive is the cause of the delay—if even the delay exists—for the names of the trustees are a sufficient guarantee both for honour and integrity. It is, however, quite possible to conceive that the idea which has been the curse of so many charities may have been the curse of this also. That idea is, that the fund must be made to show good management; and by no means can this be so certainly achieved as by doing nothing beyond adding interest to principal, and waiting for proper opportunities to spend it.

I claim the Peabody Fund as the fund of the working poor of to-day; the poor of the future will be taken care of by the future. Let us take care of the present, and show that our public men are capable of utilising rapidly and efficiently a gift which is the more valuable because it did not emanate from one of ourselves.—I am, &c.,

A Citizen of London.

SHOULD PERSPECTIVE VIEWS BE EXCLUDED FROM COMPETITIONS?

Sir,—It will never do to allow "P. E. M. s letter on the above subject, which appeared in your last issue, to pass unchallenged, seeing that it contains some pleasantly-written mistakes which should be rectified. The power of thinking and drawing in perspective is one of the most valuable aids to the true architect, and the power of showing in colour his design with the varied materials he may introduce is one of the highest efforts of art, which should be encouraged upon all occasions, not ignored, as some would have it. How many instances do we see of buildings being erected which never could have been shown in perspective by the architect? Elevational slits of frontages, showing plenty of superficial and T square designs, which are never by any chance so seen in reality—chapel fronts of decorative design attached to flanking walls of barest brick; houses faultless as to façade, innocent of thought as to sides and back. Such absurdities could not possibly occur if the architect had conceived his design in perspective. How many church and other towers do we see that plainly tell us they have never been even roughly sketched in correct perspective? Let us examine the handiwork of such men as Pugin, Street, Viollet le Duc, and others, and see how thoroughly they think and feel in perspective even to the slightest detail. Surely such examples should not be thrown away upon us. As to the "cooking," "fudging," and "jiggering" to which "P. E. M." so feelingly alludes, that is simply funny, and certainly no argument against perspective drawing or colouring. What is more gratifying or instructive to a lover of art or architecture than to see a noble building nobly rendered, accurate in drawing, and true in colour? And it is cheering to see upon the walls of this year's exhibitions works of true art, in design, line, and colour (or perhaps etching), evidently the production of one mind. But these last are indeed a select few! Let us not discourage the real progress of art, by disparaging those means by which alone such results can be attained.—I am, &c., W. H. Lockwood.

NEW MASONIC HALL, LIVERPOOL.

Sir,—In your issue of the 9th instant, I perceive an advertisement inviting architectural competition for a proposed new Masonic Hall at Liverpool, which, of course, is all right, only the following clause is inserted:—"The competition will be limited to those architects who are subscribing members of a Masonic Lodge in England," which appears to me to be *not* all right—for two reasons. First, since competition is invited, the object should be to get the best plan possible, no matter who is the author of it. Second, it is understood that Masons impress upon all candidates for their "mysteries" that on no account are they to allow business prospects to have the slightest influence on their minds when requesting to join the society; yet what a commentary is the above-quoted clause to such a rule! Does it not, in fact, hold out a premium to men to become Masons? For my part, I know of no good and honest reason for the insertion of the restrictive clause above alluded to; however, possibly it may be done out of *pity*, as, on account of the secret knowledge (?) imparted to members of the fraternity, it might well be judged that it would be quite impossible for the production of any non-Masonic architects to come at all up to the mark, far less to carry off the prize!—I am, &c.,

June 12th, 1871. Precept and Practice.

AN ADVERTISING "ARCHITECT."

Sir,—I have just clipped from a weekly journal the following advertisement. It needs no comment:—

"Architect.—Clergymen, gentlemen, and others contemplating building or making alterations, can have their ideas carried out or their designs put into artistic or practical form by an artist architect of great experience. Charges are fixed, and moderate.—C. A. R, (161), ———————— street, Strand, W.C.—

I am, &c., H. W. P.

[We have omitted the address. After all, this puffing craftsman, whoever he is, is ashamed to give his name.]

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Intercommunication.

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QUESTIONS.

[2239.]—**Colouring Drawings.**—I am making a perspective view of the Parthenon at Athens. Could any of your readers inform me how to colour it, &c., and finish the foreground, &c.?—Attica.

[2240.]—**Collegiate Architecture.**—Will you or some subscriber to your now fully recognised "Intercommunication" kindly name a work giving the best information on collegiate architecture?—A Student.

[2241.]—**Drawing Perspectives.**—Would any friend kindly inform me, through the medium of the "Intercommunication," if there be any readier and simpler method of putting architectural drawings into perspective than the ways usually taught in works on perspective?—Inquirer.

[2242.]—**Timber.**—Will any reader of the Building News kindly inform me on the following important subject—viz., how are Swedish, Dantzic, and Memel timber to be known from each other before and after sawn?—R. P.

REPLY.

[2236.]—**Architects and their Clients.**—Instances are by no means rare.—F.

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ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Northamptonshire and Leicestershire Architectural Societies' Meeting.—A general and united meeting of the Architectural Society of the Archdeaconry of Northampton and Leicestershire Architectural and Archæological Society was held on Tuesday and Wednesday week at Uppingham, under the presidency of the Rev. Lord Alwyne Compton, rector of Castle Ashby. The business part of the proceedings having been dispatched, the party started at half-past two o'clock for Ayston, the parish church being visited. An object of great interest was a three-light stained-glass window at the east end of the south aisle. In the upper part of the centre light of the window was a figure of Christ on the Cross, round the shaft of which was coiled a serpent. Beneath was the Virgin Mary with the infant Jesus. The outer lights severally bore a figure of S. John and S. Mary. The glass of the window appeared to be of the later part of the fourteenth or the early part of the fifteenth century—about 1423-30. In the churchyard, under the shadow of the wall of the south aisle, there are two recumbent stone effigies, which excited considerable interest. They are monuments of the fourteenth century, and very much mutilated. One of the figures is so much abrased that it is impossible definitely to identify it, but its companion figure, although the face is greatly mutilated, still exhibits the priest's chasuble, which the uninitiated were apt to mistake for the shield of a crusader. Passing on through Preston and Glaston, Lyddington was reached. The fine parish church sadly needs restoration. Passing on through Stoke Day, a halt for the day was made at Uppingham, a public meeting being held in the evening. Papers were read by the Rev. J. L. Baker on the game of "Peg-meryl;" by the Rev. G. A Poole on "Memorials for the Dead;" and by Sir Henry L. Dryden, on the Master's House, S. John's Hospital, Northampton. On Wednesday morning the excursionists proceeded to visit successively the churches of Seaton, Harringworth, Laxton, Blatherwycke, Bulweck, Deene, Kirby Hall, and Rockingham, where the proceedings were pleasantly concluded by a luncheon provided by Mr. Geo. L. Watson.

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The Scottish Memorial to the Prince Consort.—The Queen is said to have expressed a desire that the Scottish National Memorial to the Prince Consort should be erected in Charlotte-square, Edinburgh. The plans for the laying out of the ground are in preparation by Mr. Matheson, of the Board of Works.

Our Office Table.

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The Election of Architect and Surveyor to the Sheffield School Board.—The Board last week proceeded to the election of an architect and surveyor, at a salary of £100 per year and extras. There were fifteen candidates:—Mr. C. J. Innocent, Mr. T. J. Flockton, Mr. J. D. Webster, Mr. H. D. Lomas, Mr. J. B. Mitchell-Withers, Mr. G. Pocock, Mr. W. J. Marsden, Mr. J. Fawcett, Mr. Scargill, Mr. T. Hind, Mr. S. L. Swann, Mr. J. Hall, all of Sheffield; Mr. J. Shaw, Leeds; Mr. E. M'Dougall, Rochdale; and Mr. E. M. Gibbs, London. In the first voting Mr. Innocent received seven, Mr. Flockton five, Mr. Webster one, and Mr. Lomas one vote. In the second voting Mr. Innocent received nine and Mr. Flockton five votes. Mr. Allott proposed and Mr. Fairburn seconded the appointment of Mr. Innocent to the office. A discussion again arose as to the precise duties to be included in the salary offered, but eventually it was decided to make the appointment under the terms set forth in the advertisement. The motion appointing Mr. Innocent was unanimously adopted.

The Pateley Bridge Stone Quarries.—On Tuesday week an incline railway was commenced which will connect the North-Eastern Railway at Pateley Bridge with the flag and landing quarries on the top of the hill, on the north side, and about 1,200 yards' distance from the railway. These quarries have long been noted for the large sizes of the landings which can be obtained, as well as for the excellence and hardness of the stone, but being at an elevation of 600 feet above the railway, the quarries have only been worked to a limited extent. Mr. Hodgson, engineer to the North-Eastern Railway, having prepared plans for an incline, getting over the difficulty of such a steep gradient by large break wheels and drum, which will, by a strong steel wire rope, lower the waggons, the full ones bringing the empty ones up, the whole range of rock on the top will be opened out by Messrs. J. and G. Metcalfe, the owners, and the works, when completed, it is expected will give employment to over 200 men.

Dispute as to the Contract for New Blackfriars Bridge.—At a special meeting of the Court of Common Council on Tuesday week, a report was brought up from the Bridge House Estates Committee, stating that an action had been brought against the Corporation by the contractors for the new bridge at Blackfriars. It appeared that Messrs. Thorn's tender for the bridge was accepted, the amount being £269,045, and that amount had been paid, with about £50,000 for "extras;" but the contractors claimed over £100,000 in addition to that. After a long discussion, the matter was referred to the Committee to act as they might think advisable in opposition to the claim.

A Workmen's Excursion.—On Monday week the workmen employed by Messrs. Silver and Sons, builders, of Maidenhead (to the number of 106) had an excursion to the Crystal Palace, and a thoroughly enjoyable day it proved. The men were conveyed to the Taplow station in vans, and proceeded by the 7.42 train, *viâ* Kensington, for their destination, where they arrived about ten o'clock. The men were entertained at an excellent dinner, presided over by Mr. Silver, supported by Messrs. Joseph and James Silver, and by Messrs. J. Truscott and Filewood. All arrived safely home.

Instructions for Taking Rubbings of Inscriptions on Bells, or other Raised Letters.—Supply yourself with strips of printer's demy paper somewhat thinner than that on which this is printed, and of suitable width, and bits of black upper leather, which may be picked up in any cobbler's sweeping corner. Lay the paper over the inscription—keeping it steady as best you may—then rub the paper with the black leather, where you feel the letters or stamps, and they will soon stare you in the face (though before, perhaps, they were illegible), and you will be pleased with your own quick and handy work. It may be well to brush the letters first of all with a dry hard brush. Heelball is better suited for incised work: such rubbings may be made, by reaching round a bell, when from some impediment or other you may not be able to get round to read it.—H. T. E.

The Fresco Discovered in Exeter Cathedral.—On removing the coatings of successive limewashings on the east wall of the western aisle of the Lady Chapel the other day, a very fine example of wall painting was discovered, representing the Virgin, surrounded with a nimbus; two angels placing upon her head a crown, with other angels around, and an outer circle of kings, queens, and dignitaries of the Church, surmounted with Cherubim and Seraphim in adoration, and bearing scrolls inscribed "Dominions, Principalities, Thrones, and Powers, &c." The subject is most artistically treated, and the figures, and those portions of the draperies that are distinguishable, show it to have been rich in colour and detail, well and boldly drawn, and very carefully finished. Unfortunately, the erection of a late sixteenth century monument has destroyed the lower and more extensive portion of the subject of this very fine, though rather late, specimen of wall painting.

The Quality of our Ancient Limestones and their Fitness for Building Purposes.—M. J. J. Omalius d'Halloy is of opinion that it is not so much the texture of the limestones which has to be taken into consideration, since the structure and texture of these stones may vary immensely, and yet they may all be suited for building purposes, provided the layers or beds have not been, as very frequently is the case, dislocated by geological upheavings, whereby many of these kinds of stone become foliated, and do not then withstand wind and weather for any length of time without crumbling to pieces.

Not so Bad as Reported.—The Paris correspondent of the *Times* of Wednesday last says:—Both Communists and British tourists in search of ruins may be disappointed to hear that, putting aside the public buildings, not a hundred houses have been destroyed in all, out of the 60,000 houses which Paris contains. This number seems so incredibly small that, had I not the best official authority for it, it would scarcely appear possible."

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Chips.

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Two more City churches are about to be removed under the Bishop of London's Union of Benefices Act—viz., All Hallows', Staining, and S. Mildred's, Poultry.

The dilapidated chapel-of-ease at Buttercrambe, in the parish of Bossall, Yorkshire, is about to be rebuilt.

The foundation-stone of a new church, to be called S. Stephens' and All Martyrs', was laid on Friday week at Lower Moor, Oldham.

As we predicted in the Building News for the 19th ult., the notice lately issued from S. Martin's-le-Grand, prohibiting the purchase by postmasters of stamps from the public, has been rescinded.

The Governors of S. Thomas's Hospital have given a valuable site for the erection of a new church at Homerton, where, with a population of 12,000, there is but one church.

An interesting collection of water-colour drawings and sketches, taken on the spot by Mr. Nicholas Chevalier, during a residence of nearly two years in the islands of New Zealand, is now on view in the picture-gallery of the Crystal Palace.

The foundation-stone of a new iron Baptist chapel was laid at Newcastle-under-Lyme on Monday week. Messrs. Morton and Co., of Liverpool, are the contractors.

The new building for the Bradford Mechanics' Institute, erected from the designs of Messrs. Andrews and Pepper, architects, at Bowling Green, is completed externally with the exception of a little carving on the lower story. It is proposed to open the institute in its new home on the 2nd October.

The post of surveyor to the Corporation of Liverpool has become vacant by the resignation of Mr. E. R. Robson. The salary is £1,000 per annum.

The *soirée* of the Royal Institute of British Architects is fixed for the 29th inst.

The Royal Academy *soirée* will take place on the 28th inst.

The London School Board have re-advertised for an architect. Applications to be sent in on or before Wednesday next.

The Rev. J. T. Law, Chancellor of the Diocese of Lichfield, has erected a fountain in the Museum-gardens of that city.

Last week Mr. J. C. Buckmaster, of the Science and Art Department, South Kensington, delivered an address before the Vice-Chancellor and members of the University of Cambridge, on "The Educational Value of Industrial and Fine Art Exhibitions."

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The North Staffordshire Permanent Economic Building Society.—The seventh annual meeting of this society was held at Newcastle-under-Lyme on Tuesday week. The President, Mr. Wm. Sutton, occupied the chair. The Secretary read the report, which showed the society to be in a very prosperous condition; that the receipts for the past year (exclusive of redemptions) amounted to £13,140 10s. 5d., being an average of £252 14s. per week, and that there had been a net increase of 162 1-5th shares on the register.

Timber Trade Review.

Prices, June 13.—Per S. Petersburg standard:—Archangel first yellow, £14 to £14 10s.; ditto second yellow, £10; Gefle mixed mill-sawn yellow, £7 15s. to £11 10s.; Hendikswall second mill-sawn yellow, £9 10s. to £10; ditto third yellow, £9; ditto fourth yellow, £8 10s. to £9; Petersburg first quality yellow, 3 × 9in., £13 10s.; ditto first whitewood, £9 10s. to £9 15s.; ditto Gromoff's shipment, 3 × 11in., £10 to £10 5s.; 3 × 7in., £8 5s. to £8 10s.; ditto 2½ × 7in., £8 10s. to £8 15s.; Gothenburg mixed white battens, £7 5s. to £7 10s.; ditto third white, 3 × 11in., £8 to £8 5s.; ditto fourth white, £7 to £7 5s.; ditto third yellow, 3 × 8in., £7 5s.; ditto 2½ × 7in., £7 10s. to £8 10s.; ditto mixed yellow, 3 × 11in., £10 10s.; 3 × 9in., £10 to £10 5s.; ditto fourth yellow, 3 × 8in., £7; 3 × 6in., £6 5s. to £6 10s.; Kragero mixed yellow, £7 10s. to £7 15s.; ditto third yellow, £6.

Per 120 12ft. 3 × 9in.:—Sannesund first yellow, £19 15s. to £20; ditto first whitewood, £18 15s. to £19; ditto common whitewood, £5.

Per S. Petersburg standard:—Christiana second yellow, £13; Quebec first spruce, 3 × 9in., £18s. 5s. to £18 10s.; ditto seconds, 3 × 9in., £13 10s.; ditto thirds, £12 to £13 5s.; ditto fourth, £11 15s. to £12; S. John's unsorted spruce, £12 5s. to £13 10s.

Hull Prices.—Per Petersburg standard:—Onega red, £14; Petersburg ditto, £13 10s.; ditto whitewood, £9 10s.; Wyburg red, £10 10s.; Memel second red, £10; Crown Riga white, £8; Quebec first pine, £19 10s.; Holmsund red, £11; ditto seconds, £10; spruce, £7 15s. to £8; Uleaborg red, £8 10s. to £9.

Timber per load:—Memel best, £3 15s.; ditto seconds, £3; Dantzig seconds, £2 19s.; Swedish, £2 15s.; Quebec yellow pine, £4 10s.

Timber per cube foot:—Quebec oak, 2s. 7d.; Quebec elm, 2s. 3d.; Memel wainscot logs, 5s.; Quebec birch, 1s. 10d.

Trade News.

WAGES MOVEMENT.

Wolverhampton.—The operative cabinet lock brass casters of Wolverhampton, to the number of twenty-nine, met again last week. Men who had seen their masters reported that the latter showed no disposition to give the rise of one farthing per pound for which the men were asking—indeed, refused any advance upon the present terms of one penny per pound. Under these circumstances, the men resolved to abide by the resolution adopted at their meeting a week before, and decline to return to work upon any other terms than those for which they have given notice. In justification of this course, they alleged that not only were they now doing more work for the money than they did when the existing scale was adopted, but that they were worth higher wages, for men were now more in demand than at that time, as was shown by advertisements from masters in Birmingham who were seeking men. It transpired that the Wolverhampton masters are seeking to supply the place of the men on strike with men from Birmingham and elsewhere, for whom the meeting reported they were advertising.

TENDERS.

Accrington.—For the erection of S. John's Schools, Burnley-road, Accrington, Lancashire. Mr. William S. Varley, architect, New Market Chambers, Blackburn. Quantities supplied:—

Mason's, Bricklayer's, Excavator's, and Drainer's Work:—

Riley	£1277		
Waddington	1256		
Ramsbottom (accepted)	923		

Carpenter's and Joiner's Work:—

Parker	£268	0	0
Hindle & Sons (accepted)	216	3	0

Flagger's and Slater's Work:—

Holden (accepted)	£121	0	0
Clegg	116	12	10

Plumber's and Glazier's Work:—

Barter (accepted)	£94	10	0

Plasterer's Work:—

Eatough	£55	14	10
Hodgson (accepted)	54	10	0

Staining and Varnishing Work:—

Riley (accepted)	£21

Tenders for the Whole Works:—

Roberts	£1867
Abbott	1512
Ramsbottom	1440

Architect's estimate, £1381.

Beckenham.—For additions to Holmwood, Beckenham, Kent, for the Rev. T. Lloyd Phillips. Mr. John Cox, architect. Quantities furnished by Mr. Sidney Young:—

Harris & Hooker	£1409	9	11
Burrows & Brooker	1130	0	0
Gascoyne & Son	1117	0	0
Crossley	958	0	0

Blisworth.—For additions to chapel, new schoolroom, &c., Blisworth. Mr. T. Heygate Vernon, architect. Quantities supplied by Messrs. Mann & Saunders:—

	Chapel & School.			Cottage.			Total.		
Shakeshaft	£1200	0	0	200	0	0	1400	0	0
Wheeler	1198	7	0	184	7	0	1382	14	0
Smith, Brothers	1177	0	0	197	0	0	1374	0	0
Adams	1038	19	8	186	0	9	1225	0	5

Burslem.—For alterations to shop premises. Mr. Geo. B. Ford, architect:—

Watkin (accepted)	£165

Cheshire.—For new wing to Boden Hall. Mr. Geo. B. Ford, architect, Burslem:—

Wallworth	£874	13	0
Dale	815	0	0
Poole (accepted)	750	0	0

Chesterton.—For erecting Primitive Methodist chapel at Chesterton, near Newcastle-under-Lyme. Mr. Geo. B. Ford, architect, Burslem:—

Grosvenor	£1770
Ellams	1475
Bennett	1470
Cooke	1466
Lea	1461
Wood (accepted)	1390

Crewe.—For enlarging schools. Mr. Geo. B. Ford, architect:—

Wood	£185
Elson (accepted)	180

Halliford.—For alterations and additions to The Cottage, Halliford, for P. Dunn, Esq. Mr. R. L. Curtis, surveyor:—

Dover, Dowel, & Co. (accepted)	£300

Hants.—For the erection of first portion of new farm buildings, cottages, and farm houses on the Grange estate. Hants, for the Right Hon. Lord Ashburton. Mr. John Cox, architect. Quantities furnished by Mr. Sidney Young:—

Roberts	£13,199	0	0
Patman & Fotheringham	12,994	0	0
Kimberley	11,398	0	0
Longmire & Burge	11,321	4	0
Colls & Son	10,877	0	0
Davis & Co.	10,328	15	11
Brass	10,312	0	0
Cooke & Green	9,920	0	0
Crossley	9,597	0	0
Bull & Son (accepted)	9,303	4	7

Highgate.—For the erection of villa residence, Wood-lane. Mr. J. W. Reed, architect:—

Chalcroft	£1557	0	0
Ebbage	1499	8	0
Heath	1425	7	0
Garrud	1358	0	0
Goodman	1348	0	0
Cooke	1340	0	0
Sale	1258	0	0
Newton & Co.	1239	15	0
Ball	1175	0	0
Hawkes	1170	0	0
Robbins & Co.	1167	0	0
Nibblett & Sons	1136	0	0

London.—For Bonded Stores under St. Pancras Passenger Station, for the Midland Railway Company. Mr. J. H. Sanders, architect:—

Dover, Dowel, & Co. (accepted)	£1614	16	0

London.—For the erection of a warehouse in Farringdon-street, for J. A. Cole, Esq. Mr. T. Chatfeild Clarke, architect. Quantities by Mr. W. Barrett:—

Ennor	£2846
Myers & Sons	2770
Henshaw	2675
Hawtrey & Son	2635
Brass	2612
Conder	2595
Browne & Robinson	2570
Merritt & Ashby	2474
Colls & Sons	2310
Hill, Keddell, & Waldram (accepted)	2249

Ludgate Hill.—Errata.—In the list of tenders published in last week's Building News for rebuilding Nos. 68 and 70, Ludgate Hill, there were inaccuracies in the amounts of the tenders sent in by the following firms. We therefore give the correct amounts:—

Greenwood & Sons	£3035
Dove Brothers	3017
Conder	2825

Norwich.—For the erection of parochial schools at Heigham, Norwich. Mr. Edward Power, architect. Quantities supplied by Mr. Peebles:—

	Girls' and Boys'.			Infants'.		
Rutland	£1730	7	7	£762	7	0
Wright	1085	0	0	478	0	0
Brown & Bailey	1064	0	0	469	0	0
Hawes	1054	0	0	490	0	0
Wilkin & Curtis	950	0	0	431	0	0
Nelson	941	15	0	413	0	0
Young	838	10	0	420	0	0

Ramsgate.—For the erection of the Prince of Wales Assembly Rooms, Ramsgate, for the Prince of Wales Assembly Rooms (Ramsgate) Company, Limited. Quantities supplied by Messrs. Pain & Clark:—

Matthews	£10833	14	7
Harrison & Sons	10500	0	0
Sollett	10290	0	0
Hill, Keddell & Waldram (accepted)	9880	0	0
Kelly	9249	0	0
Haywood	8276	18	2

Sandwich.—For the erection of police-station at Sandwich, Kent, for the justices of the county of Kent. Mr. Martin Bulmer, county surveyor:—

Dover, Dowel, & Co.	£2800	0	0
Wilson	2688	0	0
Cozens Brothers	2640	0	0
Styles & Son	2625	0	0
Woodcock	2590	0	0
Stiff	2575	0	0
Harnett	2544	0	0
Wise	2526	0	0
Messrs. Denne	2498	0	0
Johnson & Co.	2424	0	0
Chamberlain & Ansell	2388	16	0
Adcock & Rees (accepted	2376	0	0

Stratford.—For the erection of sheds and chimney shaft for the Imperial Chemical Company. Mr. F. Allen Edwards, architect:—

Chessom	£1270	0	0
Wigmore	1203	0	0
Whittick	1185	0	0
Lovejoy	1161	5	0
Ebbs & Son	1132	0	0
Williams & Son	1067	0	0
Aitchison & Walker	1066	0	0

CONTRACTS OPEN FOR BUILDING ESTIMATES.

Barton, June 24.—For levelling, paving, sewering, and channelling Timothy-street, Eccles, within the district. George Trenbath, clerk, Boardroom, Patricroft.

Bridewell Hospital, July 1.—For eighty years by public tender, the site of Radley's Hotel and two houses, No. 12 and 13, adjoining, in New Bridge-street. A. M. Jeafferson, at the Clerk's Office, Bridewell Hospital.

Warrington Water Works Company, June 24.—For the completion and covering over of a reservoir, situate near the village of Winwick, near Newton-le-Willows. James Riley, secretary, Water Works Office, Warrington.

Leeds, June 21.—For the erection of new co-operative store, at Pudsey, for the Leeds Industrial Co-operative Society, Limited. Wilson & Bailey, architects, Central Market Buildings, Leeds.

Sale Sewerage Works, July 21.—For the sewering (including manholes, ventilators, &c.). curbing and channelling of the following streets—viz., North-street, South-street, West-street, Craven-terrace, Stamford-place, and part of Montague-road, extending to about 736 lineal yards of 12in. fire clay pipe sewers, 441 lineal yards of 9in. ditto, and 2,188 lineal yards of curbing and channelling. Henry Dixon, clerk to the board, Local Board Offices, Sale.

Merthyr Tydfil Union, June 23.—Aberdare Hospital.—For the erection of the above hospital, near Mill-street, Aberdare. Frank James, clerk, 184, High-street, Merthyr.

House of Correction, Coldbath-fields, June 23.—For sundry works in the alteration of some of the prison buildings. John S. Skaife, clerk to the Visiting Justices.

Hedingham and Lexden and Winstre Highway Boards, June 22.—For the supply, delivery, and fixing of the following bridge ironwork, &c.—viz., 4 wright-iron riveted girders, made of the best Yorkshire or Staffordshire plates, each 27ft. long, ½in. web, 12in. deep. Rob. F. Stedman, Sudbury; Henry Jones, Colchester, clerks to the above boards.

Preston Station, July 10.—The London and North Western and the Lancashire and Yorkshire Railways Companies, owners of the North Union Railway, for the erection and completion of a new passenger station, iron bridge under Fishergate, iron roof, and other works, at Preston. Thos. H. Carr, secretary, Preston.

Prince Edward Island, July 19.—For the construction and equipment of a railway of 3ft. 6in. from Cascumpec to Georgetown, a distance of about 120 miles. T. H. Haviland, Colonial Secretary.

London and North-Western and Great Western Railway Companies, July 4.—Have from 30,000 to 40,000 Baltic old sleepers to dispose of, suitable for fencing or firewood. J. Wait, secretary, Birkenhead.

Leeds, June 21.—For additions and alterations to S. Matthew's National Schools, Little London. George Corson, architect, 5, South Parade, Leeds.

Portsmouth, June 28.—For the construction of a quay wall, about 350ft. long, and 24ft. high, and other works in connection therewith, adjoining the harbour, at Flathouse, in the said borough. John Howard, town clerk.

Tunbridge Wells Cemetery, June 24.—For the various cemetery buildings. Thomas Lewis, clerk to the board, Town Hall, Tunbridge Wells.

Midland Railway, June 20.—For wrought and cast iron work required in making certain alterations to the goods warehouse at S. Pancras Station. James Williams, secretary, Derby.

BATH AND OTHER BUILDING STONES, OF BEST QUALITY.

RANDELL, SAUNDERS & CO., Limited,

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Bath Stone Office:

[Advt.] CORSHAM, WILTS.

TO ARCHITECTS.

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				Per 1,200 Slates.			Equivalent to per square.
Best Green Slates	14 by 7	...	...	2	17	6	... 16s. 6d.
Do.	do.	13 by 8 ...	...	2	17	6	... 16s. 6d.
Do.	do.	13 by 7 ...	...	2	5	0	... 14s.
Do.	do.	12 by 7 ...	...	1	18	6	... 13s.
Do.	do.	12 by 6 ...	...	1	7	6	... 11s.

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Specimens at Museum of Geology, Jermyn-street, Piccadilly, W., and at Architectural Museum, Tufton-street, Westminster.

LATEST PRICES OF MATERIALS USED IN CONSTRUCTION.

METALS.

Lead.

Pig—Foreign	per ton	£17 15 0	£18 0 0
,, English W.B. . .	do	19 15 0	20 0 0
,, Lead Co.	do	18 15 0	19 0 0
,, Other brands . .	do	18 2 6	18 10 0
Sheet Milled	do	18 15 0	19 0 0
Shot, Patent	do	20 10 0	21 0 0
Red or minium	do	20 10 0	0 0 0
Litharge, W.B.	do	0 0 0	0 0 0
White Dry.	do	25 6 0	26 0 0
,, ground in oil . .	do	0 0 0	0 0 0

Copper.

British—Cake & Ingot	per ton	74 0 0	0 0 0
Best Selected	do	76 0 0	0 0 0
Sheet	do	77 0 0	79 0 0
Bottoms	do	81 0 0	0 0 0
Australian	do	73 10 0	76 0 0
Spanish Cake	do	0 0 0	0 0 0
Chili Bars, cash . . .	do	65 10 0	66 10 0
,, Refined ingot . .	do	70 10 0	72 0 0
Yellow Metal	per lb.	0 0 6⅜	0 0 7

Iron.

Pig in Scotland, cash	per ton	2 17 3	0 0 0
Welsh Bar, in London .	do	7 5 0	7 10 0
,, Wales .	do	6 12 6	6 15 0
Staffordshire	do	7 15 0	8 5 0
Rail, in Wales	do	6 15 0	7 0 0
Sheets, single in London	do	9 5 0	10 5 0
Hoops, first quality . .	do	8 15 0	9 5 0
Nail Rod	do	7 10 0	7 15 0
Swedish	do	9 15 0	10 0 0

Timber.

Teak	load	12 5 0	13 10 0
Quebec, red pine	,,	3 15 0	4 15 0
,, yellow pine . .	,,	4 5 0	5 5 0
Quebec oak, white . . .	,,	6 0 0	6 5 0
,, birch	,,	3 10 0	4 10 0
,, elm	,,	4 0 0	4 10 0
Dantzic oak	,,	4 10 0	6 10 0
,, fir	,,	2 7 0	4 0 0
Memel fir	,,	2 10 0	3 10 0
Riga	,,	3 5 0	3 10 0
Swedish	,,	2 5 0	2 10 0
Masts, Quebec red pine .	,,	4 0 0	6 10 0
,, yellow pine . . .	,,	4 0 0	6 10 0
Oregon	,,	7 0 0	9 0 0
Lathwood, Dantzic, fm. .	,,	3 0 0	5 0 0
,, St. Petersburg	,,	5 5 0	5 15 0
Deals, per C., 12ft. by 3 by 9in.,			
Quebec, white spruce . .	,,	12 10 0	18 0 0
St. John, white spruce .	,,	12 10 0	14 10 0
Yellow pine, pr reduced C			
Canada, 1st quality . . .	,,	18 0 0	19 10 0
,, 2nd do	,,	13 5 0	14 0 0
Archangel, yellow . . .	,,	12 10 0	14 10 0
St. Petersburg, yellow .	,,	13 0 0	13 10 0
Finland	,,	7 10 0	8 10 0
Memel and Dantzic . . .	,,	0 0 0	0 0 0
Gothenburg, yellow . . .	,,	8 10 0	10 10 0
,, white . . .	,,	8 10 0	9 10 0
Gefle, yellow	,,	10 10 0	12 10 0
Soderham	,,	8 10 0	12 0 0
Christiania, per C., 12ft. by 3 by 9in., yellow . . .	,,	10 0 0	12 10 0
Other Norway.	,,	7 0 0	8 0 0
Flooring boards, pr square of 1in., first yellow . .	,,	0 9 0	0 10 0
First white	,,	0 8 0	0 9 0
Second qualities	,,	0 6 0	0 8 0

Oils, &c.

Seal, pale	per tun	33 10 0	36 0 0
Sperm body	,,	82 0 0	0 0 0
Cod	,,	35 10 0	0 0 0
Whale, South Sea, pale .	,,	34 0 0	0 0 0
Olive, Gallipoli	,,	47 10 0	48 0 0
Cocoanut, Cochin, tun .	,,	50 0 0	0 0 0
Palm, fine	,,	37 0 0	0 0 0
Linseed	,,	32 10 0	0 0 0
Rapeseed, Eng. pale . .	,,	45 10 0	0 0 0
Cottonseed	,,	27 0 0	31 10 0

◆

BANKRUPTS.

TO SURRENDER IN THE COUNTRY.

Bradley, George, Kingston-on-Thames, builder, July 6, at Kingston-on-Thames.—Hawkins, Frederick, formerly of Hillside, Upper Norwood, builder, June 24, at Croydon.—Hawkins, George, S. Aubyn-road, Upper Norwood, June 24, at Croydon.

PUBLIC EXAMINATIONS.

June 23, W. H. Mitchell, Chippenham-road, Harrow-road, builder.—July 4, F. Chadwick, Selwood-terrace, Fulham-road, surveyor.—July 13, G. Clemans, Westerham, Kent, builder.—June 29, S. Verity, Meanwood, near Leeds, stone merchant.—July 13, J. Bewley, Cambridge, ironfounder.

DIVIDEND MEETING.

June 27, T. and B. Goldthorp, Ashton-under-Lyne, timber merchants.

DECLARATIONS OF DIVIDENDS.

C. Godbolt, Lowestoft, builder, div. 3s. 4d.—J. Hughes, Liverpool, builder, div. 1s.—J. and W. Roose, Ashbourne, Derbyshire, plumbers, div. 1½d.—C. S. Wilmot, Upper Thames-street, ironmonger, div. 2s.—T. W. and H. Pauton, Monkwearmouth, ironfounders, div. 9d.

SCOTCH SEQUESTRATION.

Francis Clough, Glasgow, plumber, June 19, at 12.

PARTNERSHIPS DISSOLVED.

Anderson and Shelmerdine, Manchester, builders.—Pickup and Lund, Burnley, engineers.—Ridley and Sons, Reading, timber merchants.

◆

SMALL-POX, FEVERS, AND SKIN DISEASES.—The predisposition to is prevented by Lamplough's Pyretic Saline. Agreeable, vitalising, and invigorating, its effects are remarkable in their cure and prevention. Take it as directed. Sold by chemists and the maker, H. Lamplough, 113, Holborn-hill.—[ADVERTISEMENT.]

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H. G. Erichsen, Esq.
L. Floersheim, Esq.
William Morris, Esq.
Philip Rose, Esq.
William Sheldon, Esq.
Lieut.-Colonel C. Napier Sturt, M.P.

BANKERS—Messrs. Glyn, Mills, Currie, & Co.

SOLICITORS.

Messrs. Baxter, Rose, Norton, & Co., 6, Victoria-street, Westminster.

Messrs. Ashurst, Morris, & Co., 6, Old Jewry.

SECRETARY (pro tem.)—J. B. Glenn.

Offices—70 and 71, Palmerston-buildings.

This Company is prepared to entertain proposals for Tramways either in the United Kingdom or elsewhere, Address, with full particulars, to the Secretary (pro tem.). as above.

EXTRACTS from the COMPANY'S PROSPECTUS.

This Company has been formed to carry out Tramway Enterprise in connection with the parties who have been mainly instrumental in the introduction of Tramways into this country and the principal cities on the Continent, and who will therefore bring to the business great practical experience.

The intention of the Company is generally to invest its own capital in the construction and development of the Tramways selected by it, and to dispose of the same from time to time when tested by the experience of actual working, in which way the public will be protected against unsound and merely speculative projects.

The Company is entirely free from any engagements, direct or indirect, with contractors, and will therefore carry out such works as it may undertake, on the best possible terms for cash.

The position of the founders of this Company will enable them to secure, on the most favourable terms, concessions from the principal cities on the Continent and elsewhere open to Tramway enterprise.

By order of the Board,
J. B. GLENN, Secretary (pro tem.).

CHARNWOOD GRANITE QUARRIES, Near Loughborough.

The CHARNWOOD GRANITE COMPANY are in a position to supply, either by rail or water, all kinds of paving setts, &c., broken Granite by hand, of different sizes, for road-making, Gravel for walks, Granite in the rough for building and breaking purposes.

The Charnwood is, beyond doubt, one of the best Granites in the kingdom; the extraordinary strength of the above is testified by Mr. Kirkaldy, Testing and Experimenting Works, The Grove, Southwark-street, London, S.E.

Copies of tests will be forwarded on application at the Quarries.

Loughborough, June 1, 1871.

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TO BUILDERS.—TO BE DISPOSED OF, a BUILDER'S BUSINESS, in a large manufacturing town in the West of England; has been established for many years. Either one or two yards to be let, with workshops and sheds. Also, a double saw-pit in each, and offices and stables in one.—For particulars apply to A. Z., Compton Villa, 29, Cotham-road, Bristol.

HANLEY-ROAD, HORNSEY.—TO BE LET on Building Leases, a valuable FREEHOLD ESTATE, eligibly situate and well adapted for the erection of houses from £30 to £70 per annum. The roads and sewers are made, and the footpaths curbed. It is within five minutes' walk of the Crouch Hill Station on the Metropolitan Railway. Omnibuses pass the estate every ten minutes to and from the West-end and City. For particulars apply to Messrs. Hammack and Lambert, Architects and Surveyors, 59, Bishopsgate-street, City, E.C.

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TOTTENHAM—Adjoining Park Station. LAND on the Coleraine Park Estate to be SOLD or LET on Long Building Leases, for the Erection of Detached or Semi-detached Villas.—Apply to Mr. T. E. Mundy, Architect and Surveyor, Park-lane, Tottenham.

TO BUILDERS and Others.—BUILDING LAND at Shepherd's Bush to be LET ON LEASE. Roads and sewers made. A handsome Gothic church has been erected on the estate.—Apply to Mr. Henderson, 30, Harewood-square, N.W.

Crown Building Land, St. James's.

A COMMANDING SITE on the North Side of Ryder-street, St. James's, and adjoining to St. James's-street, is offered by the Commissioner of Her Majesty's Woods, TO BE LET by TENDER on Lease for 80 years. The tenders to be delivered on Friday, June 30th. Forms and conditions of tender may be obtained at the Office of Woods, No. 1, Whitehall-place, or of Arthur Cates, Esq., No. 7, Whitehall-yard, S.W.

DEEP WELL PUMP FOR SALE.—Treble Pump and Horse Gear, 140ft. Copper Pipe.—Apply, Stimpson, 78, Brompton-road, S.W.

A FIREBRICKLAYER'S BUSINESS, Established 18 years, in the centre of the City, TO BE DISPOSED OF, in consequence of ill-health of proprietor.—Apply personally at 92, Jamaica-road, Bermondsey, between Six and Nine p.m.

BUILDING LAND.

MESSRS. DRIVER beg to inform the public that they have some exceedingly eligible BUILDING LAND TO BE LET ON BUILDING LEASE, and SOLD in the following Districts:—

KEW.—Cumberland Estate, close to the Station and Kew Gardens. Roads made.
CAMBERWELL.—At the rear of the Camberwell New-road Station.
COLD HARBOUR-LANE.—Twenty Acres, close to St. Saviour's Church.
EALING.—Adjoining the New Station. Castle Hill Park Estate. Seventy-five acres.
ESHER.—Thirty-five acres, fronting high-road, and suitable for first-class villas.
HANWELL.—Fronting the high-road and near the Station.
NORWOOD, SURREY: BEULAH PARK.—146 acres, well timbered.
DENMARK-HILL, SURREY.—About four acres, well adapted for superior residences.
REGENT'S PARK.—With frontage to the Park and Albany-street, 300ft. square.
BREAD-STREET-HILL.—Area about 600 feet, suitable for a warehouse.
RICHMOND.—Lansdowne House Estate, frontage on Richmond-hill, the Lower-road, and abutting on the Thames.
MALDEN, Surrey.—230 acres, good frontage and close to the Station.
BETCHWORTH.—Undulated and well-timbered. Suitable for superior residences.
CHOBHAM and CHERTSEY.—Forty-four acres, fronting a high-road.
LEYTON.—Sixty-seven acres. Detached Plots.
LEYTONSTONE.—Thirty acres, close to the Station. Roads and Sewers made.
BOW.—Suitable for small Houses.
TUNBRIDGE WELLS.—The Culverden Estate, adjoining the Town.
TOTTENHAM.—West Green-lane, with frontage thereto, and the high-road. About forty acres.
DITTO.—Hanger-lane. Three acres. Good frontage.
NORTH SHIELDS.—Valuable Building Sites surrounding the Town.
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REGENT'S PARK—SITE of the COLOSSEUM.—Valuable BUILDING LAND TO BE LET, occupying about 81,000 square feet, with about 300 feet frontage to the Park, and also to Albany-street.—For terms and particulars, apply to Messrs. Mayhew, Salmon, & Whiting, Solicitors, 30, Great George-street, Westminster; and to Messrs. Driver, Surveyors, Land Agents, and Auctioneers, 4, Whitehall, London, S.W.

THE

ENGLISH MECHANIC

AND WORLD OF SCIENCE.

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The work will be published in several Numbers, each containing 60 Plates.—No. 1, Imperial 4to., 21s.

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SEWAGE IRRIGATION AND DOWNWARD FILTRATION.—A paper on the SELECTION and PREPARATION of SUITABLE LAND, read at Maidstone, Nov., 1870, by Mr. J. BAILEY DENTON, C.E. One Shilling by post.

E. B. SMITH, *Maidstone Journal* Office, Maidstone.

THE BUILDING NEWS.

LONDON, FRIDAY, JUNE 23, 1871.

PUBLIC MONUMENTS.

THE subject of public monuments, and especially effigies of great men, is now under constant discussion, owing to the proposals to adorn the ornamental spaces contiguous to the Houses of Parliament with statues of British statesmen. Few questions of the kind are more difficult, and few are more interesting. We have never in these matters been celebrated. The interiors of S. Paul's and Westminster exhibit a lamentable confusion of mortuary trophies, with which art has had nothing whatever to do—masses of marble, carved enormities and unnatural symbolic groups, in nearly every instance Pagan in design. But, at present, we refer more particularly to open-air statues, though, in passing, it may be noticed that our triumphal columns are generally better placed. That the Doric pillar on Fish-street-hill appears to little advantage is due less to any fault of the architect than to the gradual rising of the earth around its base, and the crowding of the locality with buildings. The Duke of York's Column is nobly-pitched, and would be a magnificent ornament to London, were it not for the hideous cage near the top, which suggests once for all that a commemorative pillar should be a monument, and not an observatory, and that the necessity for these disfigurements is utterly artificial. Much criticism has befallen the Nelson Monument in Trafalgar-square; but it is of imposing aspect, nevertheless. It is when we come to the *al fresco* effigies of our historical characters that London chiefly fails—not merely in their forms as works of art, but in the situations in which they are erected. Trafalgar-square, not long ago, suggested the idea of a lately-opened cemetery, with Nelson on a towering column, Havelock on a pedestal, Jenner in a chair, and the other heroes on horseback. The equestrian effigy of Charles I. is exactly where a statue should be, at a confluence of great thoroughfares and looking down a splendid perspective. Contrast it with the image of Mr. Peabody, disgracefully thrust into a corner at the back of the Royal Exchange. That of James II. at Whitehall is out of sight. As for the others, in the squares they would be decorative if Englishmen understood what a square should be; but they do not. That of Trafalgar is the only one, in the true sense of the term, which our metropolis possesses. The others are mere gardens, railed in and planted. Soho, S. James's, Cavendish—where stands a monument of English shame rather than one of any great man's greatness—Hanover—where a really good figure of Pitt, Chantrey's work, stands in not the worst of positions—Bedford and Russell-squares, are all miniature and exclusive parks, each adorned with a statue; but these memorials are not, within the strict meaning of the word, public. Well, to sum up, we have in London thirteen images of kings and queens, if it be possible to include the ghastly skeleton in Leicester-square, three Wellingtons and one Nelson, three statesmen, one Radical Reformer of the olden type, and one popular benefactor of the same class. These are of a far higher order than the absolutely modern works, and not one of them, however secluded, but puts to shame the gross caricature of Richard Cobden's noble figure and features which disfigures the chief thoroughfare of Camden Town. We say nothing of the images erected on the Holborn Viaduct, because they are merely typical, and really adorn the structure, or of the effigies proposed to be niched in Westminster Hall, since that it is not "open-air;" but we would refer to the preposterous Guards' Memorial in Waterloo-place as an example of vulgar clumsiness. Who that has seen the monuments of Goethe and the Three Printers at Frankfort, or that of Rembrandt, at Amsterdam, can fail to take in our meaning? Nor have the French less capacity for erecting stately memorials (albeit for pulling them down also) and fixing upon appropriate sites for their disposition. Never in Paris would have been seen such a grotesque as the Trojan Horse on the top of the arch at Hyde Park Corner, or the Achilles in the corner of Hyde Park. This question is becoming all the more important, not merely on account of the sculpture about to be distributed in the neighbourhood of the new Palace of Westminster, but also in anticipation of the statuary which it is proposed to range along the line of the Thames Embankment. The public must be anxious to save this noble thoroughfare from disfigurement and disgrace. But the curious point is, what is the public sense, what is the general expectation upon this subject? Both, undoubtedly, have made great advances. We cannot conceive, in our days, a naked General Wolfe, crowned by a glory, and upheld by a Grenadier; Admiral Holmes as a Roman; Captain Blair riding a sea-horse; Pitt sitting to History, which paints his portrait; Percival lying on a mattrass; Sir John Moore receiving a laurel wreath from the Spaniards—of all nations! or those other allegorical absurdities which were the delight of two or three generations ago, and, indeed, until a later time. Meanwhile, a proposal has been made to classify our public memorials, to reserve cathedrals and abbeys for divines, with, it is presumed, poets, writers, and statesmen, though the rule, strictly applied, would relegate these last to the Houses of Parliament; the inns of court and the courts of justice for jurists; the Halls of the medical colleges or of hospitals for eminent medical men; the university halls for men of learning; and the halls of our scientific institutions for men of science. We very much doubt whether any such arrangement would ever satisfy the sentiment which proposes to erect the memorial of a great man. Not that sculpture creates fame, except for the sculptor; but that it is an outward and visible manifestation and proof of it in the eyes of posterity. It would be a mistake to shut up the image of an antiquary among antiquities, or that of a great anatomist among the specimens in the Royal College of Surgeons. But, we repeat, the grand essential is to study what we have, and the possibility of rising to a higher style as to the conception, execution, and settlement in permanent places of our public memorials. There does not exist in London a solitary example worthy of being taken as a model; not even "the masterpiece of Grinling Gibbons," as guide-book makers, following one another with slavish monotony, pronounce it, which we heartily wish had been melted down long ago into knife and fork handles; or that respectable imitation of a Corinthian column, the Nelson Monument, crowned by the somewhat anomalous cocked hat of our naval hero; or Chantrey's George the Fourth, in the attitude of a Brighton riding-master; or the idiotic majesty, though well pitched, of George III., in Cockspur-street; or Sir Henry Havelock, in the attitude of a soldier at ease, but with the expression of a Methodist preacher: his companion, Sir Charles Napier, looks like a conceited corporal, who has just been complimented by his adjutant. We have noticed the Guards' Memorial, which resembles nothing more than a pastrycook's trophy; but not the Westminster Boy Memorial, which hath the likeness of a dry drinking-fountain. Oddly enough, one of our best specimens—that of James II.—stands purgatorily in a dirty yard off Whitehall, instead of being placed, for instance, at the intersection of two such streets as Oxford-street and Regent-street—spots which would not be required exclusively for lamps if our thoroughfare lighting were at all decent. There is Lord George Bentinck, shrouded in the obscurity of Cavendish-square; Queen Elizabeth outside, in a disused churchyard; and Queen Victoria inside the Royal Exchange; and George Stephenson consigned to a railway station. Not any of these can very rapturously be recommended. Sir Robert Peel, at the top of Cheapside, occupies an excellent position, as does William IV. in view of London-bridge; but where is Cœur de Lion, after his many mutations?—this statue has always been a sort of nightmare in the sculpture world of England—and where is George Canning, who was so long his maltreated colleague? Let us note a few incidents connected with some of these. That of Pitt, in Hanover-square, is without outline—the great fault of our public statues—being muffled up, obediently to a ridiculous tradition, in a semi-Classic, semi-Red Indian, or blanket, toga; that of the Duke of Kent, at the upper end of Portland-place, is nearly smothered among architectural accessories; Chantrey's George IV., in Trafalgar-square, though equestrian, is also togaed; that of Jenner, though Trafalgar-square has been relieved of it, has been doomed to sit among the verdure and water of the Old Court suburb, where it some day may be mistaken for a river god; indeed, the catalogue, and the criticisms upon it, might be almost indefinitely extended. But a final word of advice to young sculptors who have opportunities of travel. If their school be heroic, let them mark the genius which created Peter the Great at Moscow, and Frederick the Great at Berlin; or, if otherwise, a single monument in Paris may change many of their preconceived ideas — the statue of Moliere, in the Rue de Richelieu, which is perfect. It will be perceived that we have omitted all mention of the Albert Memorial; but this has been purposely.

THE HALF-AND-HALF STYLE.

IF the present time is one in which public opinion on a variety of points is thoroughly unsettled, it is one in which public taste seems equally subject to change and uncertainty. There are a vast number of people who do not know their own minds about architecture, any more than about religion or politics; and their hesitation naturally expresses itself in the style which we now have to notice. Our published illustrations give little idea of the extent to which this style prevails. It is less common in public buildings than in others, and least common of all in churches, which form so large a per-centage of them. Its examples, too, are rarely of very great merit, and thus, from one cause or another, the selections from them which appear in the pages of an architectural journal give no criterion of their absolute abundance. They vary much in character, and it would be easy to put together a series in regular gradation, from Gothic designs containing a little Classic, down to Classic ones modified by a little Gothic. They are a symptom of transition, of dissatisfaction with existing types, of readiness to accept new ideas. They may possibly be steps on the road to another permanent system, but they can hardly be permanent themselves. The half-and-half style is too crude and disorganised to endure.

This fashion of mixing up the peculiarities of two or more past manners of building is often, as we have said, a symptom and result of dissatisfaction with all of them. It is felt that they all, more or less, fail to suit us; that in all there is much that we want to get rid of, while there may also be much that we would gladly, if possible, retain. This hybrid system of design, if taken at the best, is a sort of experiment: its followers may be looked on as inquiring whether it is practicable to keep the useful and reject the useless amongst the art-traditions of the past. "We admire," they may be supposed to say, "the massiveness, breadth, and grandeur of Greek and Roman work; but we see that Greek construction is unscientific, and Roman construction untruthful. We admit that both owed half their characteristics to a climate and a civilisation different from ours; we are convinced that both can only be successfully imitated with the costliest kind of masonry and the highest finish of detail—that both, in short, are so expensive that we can rarely afford to do more than caricature them. On the other hand, we admire the skill and truthfulness of Gothic construction, the ease with which the Pointed style adapts itself to circumstances, the freshness and naturalness of much of its ornament. But it, too, looks unreal, if literally revived; its spirit is not the spirit of modern times; it tends to be fantastic, romantic, over-picturesque. We do not want to disguise our shops in middle-age costume, nor to put our warehouses into a sort of fancy-ball dress; and we mean to try if the Classic simplicity of expression cannot be joined to Gothic honesty and naturalness of design." The aim seems plausible enough, and is, in fact, to a great extent a good one. The mistake lies in uniting the details of two styles, and supposing that this is the way to unite their spirit. What needs doing is something much more subtle and difficult than this, otherwise every pupil and office-boy might invent a new style. Still, these attempts, unsuccessful as most of them are, have something to teach. They often show where a change is wanted, though they seldom show exactly what that change should be. The details which they agree to reject, whether Gothic or Classic ones, are likely, though not certain, to be found in reality objectionable. They may, indeed, be set aside through prejudice, but it is equally probable that good cause exists for their disuse.

Of the Gothic details omitted in these hybrid structures, one of the most constant is the tracery window. Here, at least in civil and domestic work, the omission is a natural one. As long as the public prefer sashes to casements, so long, at least, will slender tracery be out of place. The horizontal lines of the sash are so marked that nothing but a solid pier or column will keep them in due subordination. Joined to the attenuated detail of the later Gothic, they catch the eye and rival the stone mullions in importance. They cut the light of the window most unpleasantly in two, and destroy the vertical tendency of the design. And apart from this, sash-frames make mullions plainly unnecessary. What need is there of stonework to support the glass, when that glass is already supported by wood? Mullions and tracery are a natural and reasonable thing while the glazing is actually attached to them. They divide the area into widths narrow enough to stiffen the lead lights and iron frames; they form the stone rebated frame border with which the casements close. But when, as in the sash, the glass is carried in a wooden frame, and this frame works up and down in a wooden border, the whole thing has been already effected. There is no purpose for mullions, except that of hiding the real construction; their occupation is gone—they are a superfluity, a sham. We see, therefore, no defensible ground for the use of thin mullions in connection with sashes, meaning by thin mullions those which merely divide lights of which several are included beneath a single arch, and which have no other purpose than thus to divide them. If they carry the wall above, or even a solid tympanum, the case is different. They have then a practical use to serve; they become, in fact, small piers or columns, and are mullions no longer. The mixed style of the last few years has thus, we think, done rightly in rejecting tracery where sashes are used; but it has not been happy in finding a substitute. Its only idea, in the great majority of cases, has been that of a round-headed aperture, very broad, very low, and very ugly. Is there, then, some transcendant virtue in a wide semi-circular sash, which totally outweighs all considerations of beauty? Every one knows, on the contrary, that nothing can well be worse. Its upper part is so ricketty and troublesome to close that it has even become the custom to make it square inside, though it appears round without. It really seems as if this dumpy meeting-house window had its ugliness tolerated for the sake of its inconvenience; it is hard, at any rate, to see why else it is endured and perpetuated.

Take another Gothic feature which this style omits, the arch moulding. In a brick building, and many of the buildings in question are of brick, elaborate mouldings are somewhat out of place. To be true in curvature they must usually be rubbed, not formed in the clay before it is burnt; and they thus become too costly for common work. They are replaced, in a great deal of this hybrid architecture, by coloured voussoirs and patterns; and only in a minority of cases with a good result. These patterns, it is true, while they are fresh and bright, contribute something to the showiness of the design. They give importance, for a time, to the arches; but they do this in a far less satisfactory way than the details which they replace. They do not repeat the beautiful curves of the window-head, and enhance their beauty by delicate gradations of light and shade; they are totally disconnected forms—patches of applied surface decoration—not decorated features of construction. The result is that the eye soon wearies of them. Their effect, perhaps, is not in all cases to be rejected; we may be willing now and then to adopt them as part of the architect's *répertoire*; but we shall do ill to accept them as a final and complete substitute for the magnificent arch-moulds of the Early Pointed period; and even such excellence as they possess they do not long retain. In our towns, at least, they fade before their designer's eyes, and in a very few years disappear entirely behind a veil of soot. After all, an arch recessed in square orders is a far more permanent and far more architectural production. If we cannot have mouldings, we can, at least, have a series of square arrisses; we can have lines of shadow and contrasting lights — something to express solidity and thickness rather than a mere surface coating of red and yellow.

Another Gothic feature abandoned by this eclectic school is the high-pitched roof. For this there may be several motives, of which a chief one seems to be the saving of thought and invention. Steep roofs cannot well have very wide spans, or they rise too high, present too much surface to the wind, and look awkward and unwieldy. Now, while it requires care and skill to cover a large area by means of several moderate-sized roofs, anybody can manage it within reasonable limits in a single span. All that is necessary is to look in Tredgold's "Carpentry," or some similar book, for the form and scantling of the trusses, to stretch them across from wall to wall, to fix on them the usual apparatus of purlins and rafters, and to finish off with the usual pyramid of slating appropriate to what is known as a "substantial family residence." It is true that by a little contrivance the trusses might have been dispensed with, and a far better house built for somewhat less money; but as the proprietor is satisfied with it as it is, this is a matter which concerns no one. Another thing which has kept the flat-pitch in favour is doubtless the idea that there must be a waste of room where the angle is steeper. On one supposition, indeed, this must undoubtedly be the case; if it is an absolute necessity that all rooms should have horizontal ceilings. If a level surface of plaster overhead is really a first requisite of civilised life, then, indeed, the inside of every roof must be chiefly wasted, and it is natural to keep all roofs as low as may be. But if, on the contrary, it is a relief rather than an annoyance to escape from the box-like cells in which we pass our days into any apartment which has a structural and distinctive form, then there is no reason why some of the pleasantest chambers in the house should not occupy the space which is now neglected. We can easily make the construction fireproof: we can render it as impervious to heat and cold as any part of the dwelling; and so far the high-pitched roof has more advantages for us than it had even for those who first introduced it. But it is not always for practical reasons, either real or supposed, that this feature is set aside. Quite as often its exclusion seems to be only one part of a system—one development of the general idea on which the designers of the half-and-half style act. Their aim—or that, at least, of many of them—seems to be the production of a horizontal style free from the untruthfulness of the modern Classic, and their low roofs, like many other of their details, are adopted simply because their character is a horizontal one. This general aim, then, even more than the separate details, is what needs to be examined. Ought our modern style to have a strongly-marked horizontal character? If not, the members of the school in question are on the wrong tack: for it is precisely this character which they seek to retain, while working to a considerable extent on Mediæval principles. Without endorsing their practice, it is easy to feel a certain amount of sympathy for it. Remembering the absurd and exaggerated verticality which some quasi-Gothic designers of the day affect, large allowance should be made for the inevitable reaction. Looking, for instance, at the "Decorated" chapel of the period, with its wiry buttresses and pinnacles, and gablets all running up to seed, one cannot be very severe on the men who say, "Come what may, we will keep clear of such frippery as this: our buildings, good or bad, shall look like buildings, and not like confectionery ornaments on a Twelfth-cake." It is enough, for the moment, to make all verticality an abomination, and to drive us into an approval of heavy entablatures and vast, overshadowing eaves. But reason shows a way between the two. On the one hand, our town architecture must, by its nature, have a considerable number of horizontal lines. The mere division of houses into separate floors is of itself enough to produce them. There will inevitably be level ranges of windows, tier over tier, and to make them look like long vertical openings would be both untrue and unsatisfactory. Keep, then, those horizontal features for which there is a reason: display them as far as they exist; but do not add others which have neither purpose nor reality. The enormous cornice, for instance, which projects from the wall near the top of these mongrel structures is quite uncalled for and unnecessary. It is not even an eaves cornice; it is a thing stuck against the parapet with no legitimate excuse whatever. Far better show the real construction, here as elsewhere; let the parapet announce itself, if there is a parapet, and decorate it instead of concealing it. Let the roof and the chimneys show themselves, and since their tendency is a vertical one, let it appear so. The very habits and customs of English society point to picturesqueness in our streets. We cannot have uniformity, for uniformity implies minute rules and regulations which would not be tolerated in this country for a moment. We cannot carry out the horizontal principle as the main one in our street architecture, with any success, until everyone is bound to build with stories of the same height, with cornices of the same section, with roofs of the same pitch, with doors and windows, even, of the same, or a closely similar pattern. Till all this is enforced by law, every frontage must take care of itself; and the only choice is to give it a picturesque sky-line or a flat one. Now nothing is less interesting, has less merit of any kind, than a row of flat-topped house fronts of all sorts of heights and sizes, bobbing up and down, and looking as if they ought to have been uniform, but could not manage it. The most Classic of Classic architects cannot admire them as a whole, for they spoil each other; few things are more offensive than an attempt at regularity which does not succeed. If we could keep our street fronts as even as a line of the Guards on parade, it might, or might not be well to do so; but since we can get them in no better trim than Falstaff's ragged regiment, the only course is to break them out of order at once. Affecting no regularity, they may easily become picturesque; all that is wanted to this end is to let them follow their nature. And so, fully agreeing that a very vertical style is not the style for our towns, we are equally sure that an affectedly horizontal one is out of place there. The true medium will be found by keeping close to realities, by letting ranges of windows run straight when there is floor above floor compelling them to do so, but by allowing the roofs to break into hips or gables or dormers, just as may be most convenient and most beautiful.

We might go on to any extent criticising the other details which are retained or omitted in this composite manner of building, and might point out, if they really need pointing out to any one, the glaring discords which are produced by mixing up the peculiarities of two opposite architectural systems. But believing the general principle involved to be a mistake, there is no need to insist further on subordinate questions. The great want for modern purposes, as we conceive, is not a style whose leading features are rigidly uniform and horizontal, however much liberty such a style may allow in minor details. It is rather one which is picturesque by nature, though it submits to restraint where restraint is necessary—one which follows and expresses the actual character of the buildings to which it is applied, being horizontal where they are horizontal, and vertical where they are vertical. And it is likely to be arrived at, not by mixing up two quite distinct and incongrous types, but by selecting that one which seems most nearly to fulfil the conditions, and modifying it gradually and thoughtfully in the required direction. Hybrid races are rarely permanent, and the hybrid style of our modern buildings is not likely to prove an exception to the rule.

SHIFTING STUFF.

IN all contracts, whether they relate to the erection of a Crystal Palace, the construction of a railway, or the cutting of a Suez Canal, there is invariably a particular kind of work, a certain portion of the estimate, that pays better than any other. This is by no means in proportion to the quality of the work, or its price, although it unquestionably depends, generally speaking, upon the quantity. Occasionally, items of small amount, for which a large price is allowed, are a good thing for the contractor; but, as a rule, the items heavy in quantity and small in price per unit of measurement, pay the best. A genuine contractor likes a "big job." He likes to deal in generalities. Petty, insignificant contracts allow no scope for the exercise of those peculiar talents which have always distinguished the English contractor. On the other hand, a large contract affords facilities for, and in fact demands, all the energy that he possesses. The readiness, aptitude for contrivances and makeshifts, promptitude in seizing every occasion that presents itself and turning it to account, indefatigable attention and untiring perseverance that all our great contractors are endowed with, are then capable of being displayed to the best advantage. It must not be supposed that those gentlemen pay no attention to, or have no knowledge of details of works. The truth is that the reverse is the case. The most intimate knowledge of the value of details, and a close study of their immense importance and bearing upon work, is indispensable to every one who intends to make money by contracting. But this acquaintance with the minutiæ of work does not prevent the contractor preferring to deal with them *en masse*. In order to traffic in tons and parts of tons one ought to be acquainted with the price of the article per hundredweight or per pound, as the case may be, but one is not in consequence limited to trading in the smaller amounts. There is just the same difference between one of our merchant princes and a small retail tradesman, as there is between a Brassey and a local builder and contractor. So well is this difference recognised and established among the parties themselves, that a contractor of the former calibre would no more think of tendering for certain descriptions of contracts than a wholesale City merchant would consent to supply private families with goods.

The days most fortunate for contractors were those which witnessed the infancy of railways, and it is incontestable that the most paying parts of the contracts was the earthwork. In other words, the amount of stuff to be shifted was the pith and marrow of the contract. This was always the heaviest item in the construction of the early lines of steam communication. Attempts were then made by engineers to approximate to the *beau ideal* of a railroad—namely, that which should have no curves and no gradients. No wonder there was an immense quantity of stuff to be shifted; no wonder that the earthworks were heavy when a curve having a radius of one mile was considered sharp, and a gradient of one in a hundred was regarded as almost too steep for the powers of a locomotive. If we draw the proper distinction between rural and urban railways, it will be admitted that in the construction of the former, especially of the earlier examples, heavy cuttings necessitated correspondingly heavy embankments. The engineer, in order to avoid the "running to spoil" of any of the earthwork, endeavoured to adhere to the golden rule so familiar at that time to young members of the profession, "Always make your cuttings equalise your embankments." At the present time this rule, though correct in the main, is not so strictly adhered to as formerly, nor could it be, bearing in mind that our system of railway construction has undergone great modification since the days of the fathers of steam locomotion. Embankments are easy enough to construct when there is plenty of stuff to be got for the purpose from the nearest cuttings, or even when, at the worst, they can be made up from side cuttings. But the case becomes very much altered when an embankment is necessary and no stuff can be got in the neighbourhood to make it with. Abundance of examples of this are to be seen in the vicinity of London, where earthworks are replaced by viaducts of brickwork. Instances have occurred in the construction of railways in which a viaduct has been built in the place of an embankment, not because stuff could not be obtained along the line for a solid bank, but because the cutting from which the supply would have to be drawn was at too great a distance, that is, the "lead" was too long. It was cheaper to use a more expensive material than to run the other so far. It is in balancing up these several discrepancies, and forming a correct judgment of the method to employ, that the genius of the contractor is displayed. It must be borne in mind that "shifting stuff" in the open country, and in a city similar to London, are totally different matters, and that our remarks apply, to their full extent, only to the former description of work.

Assuming that our statement respecting the comparative advantage and pecuniary benefit to the contractor of a large amount of earthwork in a contract is accurate, the question will naturally be asked—why? A little consideration will demonstrate the reason, and in order to render the subject clearer, let us compare earthwork with brickwork. In the first place it is a great deal more difficult, particularly for an engineer, to estimate what the cost of shifting so much stuff in certain situations will come to, than it is for him to arrive at the cost of so much brickwork. The price of bricks per thousand can be ascertained to the fraction of a shilling; the cost of the labour to build a rod of ordinary brickwork can also be known to the same degree of accuracy; and, moreover, there is only one way of going to work about it, in whatever locality the operations may be carried on. But it is far otherwise with earthwork. Independently of the fact that the price varies very widely with the nature and situation of the material, there are numerous ways in which the shifting may be accomplished. It may be run in barrows, carted away, removed in barges, as occurred during the construction of the Thames Embankment and the Metropolitan District Railway, or conveyed away upon a tramway, either by horse or steam power. The difficulty of arriving at a correct estimate of the cost of shifting stuff was well exemplified in the early days of railways on the Continent. The French engineers made their usual mathematical and elaborate calculations respecting the effect that the different "leads" would have upon the price, and their own native contractors followed suit. As may be imagined, the French tenders were enormously high. Without in the least troubling themselves about calculations of any but a very simple arithmetical character, the English contractors made their estimates, which were much lower than those of their foreign *confrères*, and obtained the contracts. It is not too much to assert that to this circumstance of readily and correctly estimating what the cost of shifting stuff would be is due the great amount of foreign work executed by English contractors. It enabled them to get a footing in foreign countries which they have never lost. Another reason why earthwork is usually so paying a job for the contractor is, that he is at liberty to use any method he pleases of executing it, which is not the case with other descriptions of work He is not hampered by a variety of conditions which are attached to other items. After some practice and experience, it is not surprising that the contractor becomes endowed with a special faculty of devising means to execute earthwork cheaply and effectually. That this is the case is amply manifested by the circumstance that some contractors tender for earthwork, if not altogether, at least in preference to other descriptions of work. Again, on a large job, it is a common occurrence to let out the shifting of stuff to sub-contractors, who not only make a profit out of it themselves, but leave a balance also to their employers. There is, perhaps, one exception to the opinions we have expressed—that is, where the shifting of stuff takes the shape of water work. But, at the same time, a high price is always allowed for such work, as there are so many contingencies to be provided for. It must, however, be confessed that there is always some risk incurred in all works in which water is present; and here, as in many similar instances, the contractor must put a little faith in his good luck.

THE INTERNATIONAL EXHIBITION: THE INDIAN AND THE FRENCH ANNEXES.

IN the notice of the International Exhibition which appeared in the BUILDING NEWS for May 5th, mention was made of the questionable position of the Indian collection in the lobby of the Horticultural, Gardens entrance. This will shortly be altered, a distinct building having been erected near the south-east entrance of the Exhibition for the special purpose of containing the Indian objects. It is a pity that the building and collection are not to be both permanently located here.

If there was the smallest appreciation of the just claims of our Indian dependency—of our own duties and interests—there would be such an exhibition on a grand scale. It is known that the native inhabitants of the vast and splendid Anglo-Indian empire, our fellow subjects, are highly ingenious; that their art principles are singularly sound and good, still existing in original purity; their manufactures many of them of unrivalled excellence; whilst, in respect of the natural productions and powers of the country, its capabilities are as vast as valuable. Yet how little, how insignificantly little, is the interest and attention manifested by the people of this country in respect of these facts, and how lukewarm the action of the Home Government in fostering or developing the talents of the people or resources of the country! There is a museum inherited by the Imperial Government from the East India Company. But where is it? Instead of making the most of it, having a worthy, accessible building to do honour to it, it is hidden—thrust into the garrets of the India Office! Indian productions are yet but curiosities in this country, and cannot elsewhere be seen at all. There should be a grand permanent exhibition of Indian art, manufactures, and natural productions, with a "Bazaar"—a real bazaar, attached—the building being of the Mahomedan-Hindoo style of architecture, illustrating its characteristic beauties, so that the building and its valuable contents would mutually give and receive adornment the one from the other. Such an exhibition would be one of the greatest attractions of the metropolis, of especial interest to foreigners, who know so little of Indian productions, and, I am sure, an immense success commercially. If the Government is not disposed to carry out such idea, it would be worth while for native merchants and gentlemen to do so.

The French Commissioners, readily alive to the interests they represent, have at their own cost erected a permanent annexe for the exclusive display of their art and manufactures. It is now open, and forms the most generally attractive part of the Exhibition. Without France, what is an International Exhibition worth? Painting, sculpture in marble, bronze, and terra-cotta, jewellery, lace, porcelain, furniture, &c., are all here in profusion, and of the highest excellence. The names of Christofle, Barbedienue, Susse, Marnyhac, and Deniere sufficiently attest the claims of the Parisian metal-workers here exhibiting. Amongst the objects likely to interest our readers are the beautiful drawings for ceiling and other decorations by Galland, and others by Prignot. There is one of Fourdinois' exquisitely-carved cabinets in walnut-wood, which well deserves attention, and there is a case of books exhibited by the architectural publishers, Morel and Co. Students of architecture not familiar with these works would do well now to make their acquaintance.

P. E. M.

ARCHITECTURAL ASSOCIATION.

At the usual fortnightly meeting of this Association on Friday evening last, after the usual routine business, the officers for the ensuing session were nominated, the election taking place on Friday evening next, that being the last meeting of the Association for the present session. Mr. J. S. Quilter, hon. sec., announced that the final arrangements for the annual excursion of the Association were completed. The excursionists will start on Monday July 31. Full particulars will be duly announced. The chairman also announced that it was proposed to hold the annual dinner of the Association at Sidcnp, on Saturday, July 8th. After the dinner it was proposed to visit King John's Palace at Eltham, and Mr. Brooks's new church on Chiselhurst Common. The Librarian announced the presentation to the Library of "Architectural Drawings," by the author, Mr. W. Burges. A cordial vote of thanks was accorded to the donor.

Mr. C. **Aldridge** then read the following paper on

ARCHITECTURAL DECORATION.

In a paper that I had the honour of reading before the Association some years ago on the subject of the architecture of North Italy, with respect more particularly to the brick and terra-cotta buildings of that country, I ventured to draw some parallels between the architecture of buildings in this country and of those that I had then lately visited, and to express an opinion that valuable lessons might be learnt by us from the examples of architectural decoration in North Italy, particularly with respect to brick and terra-cotta ornament. With regard to this particular class of decoration, I must express my regret that the paper announced in the syllabus to be read on April 21 last, "On the Treatment of Terra-Cotta," by Mr. J. Tavenor Perry, should have shared the some fate as some of the other innocents that have been massacred during this session, more particularly as the subject of terra-cotta ornament is now being revived in this country, and we have already several important buildings in which this class of decoration has been almost exclusively used. I may mention, among others familiar to you, the new buildings for Dnlwich College and the Museum and Albert Hall at South Kensington, concerning which I hoped Mr. Perry would have given us the benefit of his valuable criticism. However, it is not my intention this evening to "put myself in his place," as the subject of my paper will be more general, and include other modes of architectural decoration; but, as I intend to touch briefly on the subject of terra-cotta ornament, I leave it open to you to confine the discussion at the close of this paper to that particular class of ornament. A word as to the subject of my paper. I shall not attempt to lay down any new theory with respect to architectural decoration, but simply and briefly to give you the results of a few general observations. I propose confining my remarks this evening to *exterior* decoration, with respect merely to secular as distinguished from ecclesiastical architecture. At a future time I may, perhaps, extend the subject to interior decoration and church architecture generally.

Brick and Terra-Cotta v. Stucco.—I shall commence with the most ordinary mode of architectural decoration, as exemplified in an ordinary London house. I speak more particularly of the modern houses and villas that have been scattered so plentifully of late years in and about London. What is the prevailing characteristic of all the architectural decoration (if, indeed, I can apply such grand words to such ignoble efforts)? I think there is but one answer to the question—viz., "Sham"—sham meretricious ornament, from the sham porticoes or pilasters that decorate the entrances to these miserable specimens of modern architecture to the sham stone cornice that is generally considered essential to "finish" the façade, and impart to it what is termed somewhat of an architectural appearance, as if the builder could redeem his many sins of omission by committing greater sins in the name and for the sake of ornament. I have mentioned the word "builder," and no doubt many will answer my censure of this prevailing style of decoration by saying that in the large majority of instances no architect has been consulted, and hence the inherent badness of the design. This, no doubt, is in a great measure true, and to some extent answers my complaint; but still there are many instances where architects have been consulted, and instead of doing better things have been obliged or content to follow in the same style of ornament adopted in the neighbourhood, excusing themselves by saying that they could not help it, or by asking what could they do better with so little expenditure? And here, I think, lies the root of the whole matter—viz., that good design and good ornament can only be obtained together with a large outlay. Thus the majority of the building public, when they require something "done on the cheap," either decline altogether to take professional advice, and content themselves with the cheap plaster ornament provided ready-made, or else consult some one who is disposed to humour their views on the subject, and avoid all dispute. But why good design (or what passes for such) should be limited to large buildings, and where economy of cost has not to be so carefully considered, I am at a loss to divine, and yet such is mainly the case, and will remain so until the public are taught a little more art, and told that good ornament does not necessarily imply a large outlay, and, on the other hand, that compo dressings in imitation of stone, with the addition of cheap graining and plenty of varnish, cannot possibly be termed architectural decoration in any true sense of the term. This brings me to the point to which I wish particularly to draw your attention—viz., that, however cheap the architecture, or however great may be the pressure put upon us, we should never sanction any architectural decoration whatever that is a sham, or an imitation of some material that the outlay will not allow us to employ. It would be preferable to have no exterior ornament at all, and use the money thus saved in trying to make the interior decoration more artistic. How much better would it be for the durability of thousands of the cheaply-built "eligible villas," and for the comfort of the inhabitants, if the money expended in compo porticoes, string-courses, architraves, cornices, balustrades, and, in fact, all the ingredients of compo architecture, were saved, and expended instead on thicker walls, stronger timbers, and joinery that does not fall to pieces a few months after it is fixed. I am convinced that it would be far better for the pockets of the landlords, the comfort of the tenants, and the artistic appearance of our towns, if every bit of this class of ornament were to be swept away, and we could return in some measure to the somewhat primitive but more honest mode of building of the seventeenth and eighteenth centuries. Art critics and others may laugh at what is termed "the Queen Annean revival," but, for my part, I am truly rejoiced at the same, feeling convinced that it is a healthy sign, and marks a change that, I hope, is dawning upon the domestic architecture of the country. I am convinced that the architects who are adopting this style of building can never perpetrate the horrid monstrosities of architectural decoration that offend our eyesight in almost every street in modern London. The best architectural ornament is first of all good design and proportion, and secondly, good workmanship and materials. If we have not these ingredients, no amount of decoration can atone for their absence; it is like trying to patch up a picture that is badly drawn and out of perspective by daubing it over with colour. We may go on decorating and laying on endless ornament, but after all our expenditure and trouble the building retains all its bad features, which cannot be concealed. Supposing, however, that the building is well designed and the various parts well balanced. What kind of decoration should we employ? In a brick building I think nothing but brick ornament or some like material, and in saying this I cannot be accused of giving too narrow a field for architectural ornament. We have now bricks of all shapes and colours, mouldings of every conceivable form, and terra-cotta ornament can be manufactured to suit every style and design. Surely here is enough variety of ornament to suit every taste—colour and form of every kind, and all made from the same material, the native clay. Let us abolish that villanous compound called Portland cement, and never use it ornamentally except as a ground-work of painting and frescoes. I am persuaded, for many reasons, that for the large majority of buildings, and particularly in London, brick and terra-cotta are the only decorative materials that can be used with any degree of success. Of course I do not wish to exclude the use of stone, but still I am of opinion, considering the nature of our climate and atmosphere, that stone should only be used as an exterior decorative material (I speak of carving, sculpture, and mouldings) with the greatest care and precaution. I will tell you why I have set my heart upon brick and terra-cotta ornament—simply because it appears to me to be the only material that possesses what I venture to think are the chief points in architectural decoration—viz., colour, durability, and economy of cost. And, firstly, as to colour. I hold that no decoration can be considered successful unless it is accompanied by colour. Colour is as essential to decoration as are light and air to our health. What, I ask, is the main difference between our large towns and those of Italy, France, and Germany? Not the style of the architecture only, for we possess as fine buildings, wide streets, and public monuments, as almost any country in the world; but in my opinion it is the lack of colour in our decoration, and the absence of all picturesqueness in our architecture. As to the latter element, I do not speak now, but it is mainly to advocate the more frequent use of colour in our buildings that I have offered to read this paper. We hear foreigners say that London is so gloomy, dirty, and always in a state of fog. We architects cannot so much help the fog, although I think even that complaint might be greatly lessened by more stringent regulations with respect to the consumption of smoke. Much may be done by us, however, to render our streets less gloomy, by the more frequent use of colour, and thus in some measure removing the uninviting appearance caused by our sooty stone buildings, cold gray brick, and grimy Portland cement houses. Our climate prevents us employing frescoes as an exterior decoration, but we have other modes of obtaining colour—viz., from bricks, tiles, terra-cotta, and mosaics, and why should we hesitate to use them?

Durability and Cleanliness.—I believe it is generally allowed that brick is about the most durable material that can be used for building purposes, and it is also the only really fire-resisting material, stone, as we know, being apt to crack and split under the influence of great heat. We have, therefore, another inducement for employing ceramic decoration. I would also say a word as to cleanliness. Good terra-cotta does not change colour like stone or Portland cement, but always retains its brightness of tone, as we may see by the numerous examples of terra-cotta ornament in Italy, mostly upwards of three centuries old, or by the more ancient Roman brickwork, which retains its colour almost intact to the present day. It can also be easily cleaned, and no amount of rain, cold, or heat can damage it to any extent.

Economy.—Terra-cotta is also, I believe, the most economical mode of decoration (I am not speaking now of elaborate ornament), certainly far cheaper in every way than Portland cement or stone carving; and I am sure if its advantages were more generally known, and its use more extensively advocated, the cost would soon become much less.

Tiles v. *Slates.*—And while speaking on the subject of colour, I must lament another great change that has taken place in our mode of building during the last half century; I allude to the introduction and now almost exclusive use of slate as a roofing material, in lieu of tiles. I venture to think this a reason for genuine regret. The architecture of London is so generally cold and monotonous that we can ill afford to lose the warmth and variety of colour to be derived from tiles. No doubt there are reasons for the substitution of slate, such as their cheapness and comparatively light weight, but these I cannot consider as sufficient reasons—certainly not the latter, it having led to the reduction of the size of the roof timbers, and consequently to weakness in construction. No doubt with our present low-pitched roofs slate is a safer covering than tiles, but this is only an additional argument for the re-introduction of roofs with a higher pitch, that would be visible from below, covered with the old-fashioned tile.

Ordinary Present Day Brickwork.—I cannot conclude these remarks upon brick and terra-cotta ornament without saying a few words upon the inferior class of brick, both with respect to colour, form, and manufacture, that is now extensively used in building under the term of "stock brickwork." I am convinced that there has been a great falling off in this respect since the commencement of this century, and I fear that the introduction of machinery for the manufacture of bricks will not tend to improve matters. I think you will all agree with me that much improvement is required in our brickwork, not only in the quality and colour of the bricks, but also in the mode of laying them. No one can fail to notice the great difference between the brickwork of the seventeenth and eighteenth centuries and that of our time. Of course, so long as the pernicious practice of using "facing" bricks (or that of building in the shortest possible time with the cheapest bricks and then covering the whole up with cement) continues, we must not hope for much improvement. M. Grüner, in his elaborate work on the terra-cotta decorations of North Italy, speaking with regard to brickwork in England says:—"In England brick was in former days modelled and cast into artistic and ornamental forms, but whether in consequence of the high duty imposed upon brick, and the consequent limitation as to size and shape, or from the influence of the contract system of building, the legal English brick has become by degrees the least durable and most unsightly in use in any country, and has hence produced that dislike to its colour and material which proceeds not from its intrinsic ugliness, but from association of the imagination with ideas of coarseness and meanness of construction."

Architectural Decoration in Stone.—Passing on from brick and terra-cotta ornament, let me now say a few words as to the various means of decoration in stone, marble, granite, &c. I propose dividing the subject under two divisions—viz., Sculpture and Material.

Sculpture.—This class of ornament includes the decorative treatment of stone, such as we see in quoins, rustications, mouldings of various degrees of intricacy and detail, carving of all kinds (from the elaborate detail of the Corinthian or Composite capital to the more simple and perhaps more effective detail of the thirteenth century), and, finally, the sculpture of the human figure and all kinds of animal life.

Quoins.—This mode of ornament should, I think, be adopted only under particular and special circumstances, and certainly *never* in artificial stone. I have seen instances, and particularly abroad (in Florence and Venice) where rusticated quoins and basements have been used most successfully to give scale and grandeur to the architecture; but we must remember that in these instances the buildings are very extensive, and the stones employed are also very large. I would venture, therefore, to say that as a rule rustications should not be used except in buildings of a large and important character, where the extra-sized stones are not out of scale, nor the extra labour on the material apparently needless extravagance. I would add that the use of stone quoins on houses that are attached on each side is simply nonsensical and a sham.

Mouldings.—The employment of mouldings as a mode of architectural decoration dates, I believe, from the earliest periods, but I must ask you to excuse the historical portion of the subject, and allow me to draw your attention solely to their use as a mode of architectural decoration. Firstly, what is the theory of their use? Twofold, I think—viz., to get a certain degree of light and shade in parts where the architecture would be bald and flat, and secondly, to give a lighter and more elegant appearance to certain portions of the building. Where should mouldings be employed, then? Firstly, as a framework to enclose certain portions of the façade, as round windows, pilasters, and panels; secondly, in large blocks, which, projecting from the general face of the work, would otherwise appear heavy and cast too unbroken a shadow; as a framework round windows and arches generally, the object being chiefly to more clearly define the line of opening, and remove what would otherwise be a sharp and unpleasant angle—a bold moulding with hollow is generally sufficient to answer the purpose, and all intricacy is to be deprecated, as being useless labour, and in London only affording opportunity for the premature decay of the material. The treatment of mouldings differs in various countries, but I think we should study their use in countries enjoying a climate more similar to our own rather than in Greece or Italy, where the brighter atmosphere and warmer climate allow more elaboration and detail. I would mention an instance where I venture to think that the use of intricate and delicate mouldings on the exterior has proved a mistake. I allude to the Houses of Parliament, where I cannot help thinking that the stone employed could hardly have failed to such an extent if a bolder and more simple treatment of sculpture had been adopted. At Henry VII.'s chapel, Westminster, the stonework had to be entirely restored some fifty years ago, while, on the other hand, we are still able to trace the detail of less elaborate mouldings in buildings of the thirteenth and fourteenth centuries, and of even earlier date. With respect to the design of mouldings, I need not say that they have to be specially considered with respect to their position, and that a base to a column or moulding to a string, which may suit very well for a height of say 10ft. from the eye, will have to be materially altered when the same is three times that height; this, although the very A B C of design, is hardly, I think, paid the amount of attention it deserves.

Carving.—Passing on to more elaborate decorations in stone, let me say a few words about carving applied as an exterior ornament, apart from figure sculpture; and before I speak of the use of this beautiful art, I should like to say something as to what I consider its *mis-use.* Carving in stone, on account, I suppose, of the extra cost in labour, is confined chiefly to buildings of a large and important character, and we seldom see it employed in ordinary house building. It is therefore an expensive luxury, to be indulged in only by the rich, and those who would seek to enjoy the same without the expense must be content with imitations in that convenient material stucco. But is not the use of carving grossly misapplied in the majority of instances? We have only to take a walk through the City to witness the lavish and injudicious use that is constantly made of carving. Elaborate stone cornices, with richly-carved brackets; delicately-carved capitals on polished granite shafts, which seem too fragile in constitution to brave the trials of our climate; richly-carved doorways, with magnificent consoles and beautiful garlands of flowers closely copied from Nature—these are some of the rich architectural luxuries that can only be indulged in by the few. And yet I think it would be a good thing for art if some heavy tax were to be imposed by Government on all *exterior* stone carving; we might then see a more economical and judicious use of the same, and perhaps a higher class of design and workmanship. I am of opinion that carving, as applied to exterior decoration, should only be used with the greatest caution. All these elaborately-carved capitals, bunches of flowers, &c., that we so constantly see, are nothing but so much waste of time and material. How much money might be saved for interior decoration if half this questionable ornament were abolished! I should like to see good moulded capitals substituted for the carving, and terra-cotta or mosaics in other places where carving is now applied. The only mode of carving that I think applicable for exterior ornament is flat ornament with but little relief, such as we see in Early Classic and Romanesque examples, and more particularly for capitals where there is any real or imaginary weight to be supported. No deep under-cutting or great projection should be allowed, as any quantity of beautiful and effective carving can be obtained by using half the ordinary amount of time and labour. All stone carving, particularly for exteriors, should be conventional, and never naturalesque, as it is neither desirable nor even possible to copy natural forms with exactness. And, finally, let there be some *meaning*, something to interest and attract our attention, in all ornament. It would be better to omit it altogether than to heap on a lot of meaningless decoration simply for the sake of laying out so much money and getting what is termed an "ornamental façade."

Sculpture.—These remarks on carving will necessarily apply with even greater force to the use of sculpture. Figure sculpture is a very important and useful adjunct to architectural decoration, and gives great importance to a building when judiciously placed and properly executed, but nothing should be more carefully avoided than an injudicious use of bad sculpture on the exterior of a building. I think that as a rule figures should always be placed in niches specially designed for them; by doing this we obtain a certain amount of protection from the weather, a background for the figures, and a far better play of light and shade than if the figures were placed without apparent thought on the summit of cornices, balustrades, porticoes, and pediments, where they always look unsafe or uncomfortable, and if the figures are partly nude, wretchedly cold and unprotected, to say nothing of the perspective effect of sculpture thus placed, which I am of opinion is seldom agreeable. We must all have noticed the singular appearance of the otherwise effective sculptures on the pediments of S. Paul's Cathedral, as viewed from above, plastered all over with lead and iron: this is a mistake which I think should never have been committed; certainly the Greeks or the Mediæval sculptors would never have made so gross a blunder.

Coloured Materials.—In the use of coloured materials, such as some of the sandstones, marbles, and granites, we have great scope for architectural decoration; but yet, on the whole, I hardly think that a judicious use has been made of these materials. The employment of marble for exterior decoration is perhaps questionable, on account of the deleterious character of the atmosphere and the expense of the material, yet I am inclined to doubt whether some of the harder marbles, such as the Carrara and some from Sicily, are not at least as durable and capable of resisting the effects of the London smoke as some of the building stones so extensively employed. Much architectural effect and colour might be gained by the use of marble or coloured stone in conjunction with brick, somewhat after the character of the well-known façade of the Ducal Palace at Venice, or that of many of the buildings of Verona, where brick and marble have been used in alternate horizontal layers, with, I think, considerable success, giving much play of colour and great picturesqueness to the architecture.

Painting.—In conclusion, let me say a few words on the subject of painting. I mean ordinary house decoration. Much might be done, I think, to work an improvement in the mode adopted in painting the external wood and iron work—a matter but too often left to the individual taste of the occupier or the tradesman. I have noticed many good designs in a great measure spoilt by the abominable way in which the painter's work has been executed. In the first place, all graining, at least on the exterior, should be abolished, and only flat tints allowed. A great saving in labour and expense would be effected, and another sham got rid of. The doors, if of deal, should be painted some neutral tint, with the mouldings, perhaps, picked out in a darker tint of the *same* colour; but it would be far better to employ the money saved by graining and varnishing in getting a better and more lasting material than deal for external doors, such as oak, teak, or chesnut, which would not require to be painted at all, but merely coated over with boiled oil. We should thus obtain a far better effect for our doorways than all the misplaced art of the grainer can supply. Window frames and sashes should invariably be painted white, or some lightish colour, on the exterior, in order to throw up the black of the glass, as it would be a great artistic improvement if the sashes and bars could be of greater thickness. We may diminish the number of divisions, and increase the size of the glass, but the larger the square of glass, so much thicker in proportion should be the sash and frame. With respect to the ironwork, it should, I think, be always painted some bright colour, such as Venetian red or chocolate, and never the dirty greens, browns, and grays we see so constantly used. I should like, if time allowed me, to say a few words with respect to the design of our domestic ironwork, but the subject has been so often attacked, and the case seems so hopeless of improvement, that I am loth to trouble you on the subject this evening.

A discussion ensued, in which Messrs. G. R. Redgrave, L. W. Ridge, Clarkson, Elkington, and other members took part, and the usual vote of thanks having been accorded to Mr. Aldridge for his paper, the meeting terminated.

The last meeting of the Association for the present Session will take place on Friday evening next, when the officers for the ensuing year will be elected, and a paper will be read by Mr. G. Aitchison, B.A., "On the Strength of Materials."

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

Lecture XXXIV.

Dr. G. G. ZERFFI delivered the thirty-fourth lecture of this course on Tuesday, the 13th inst., in the Lecture Theatre of the South Kensington Museum. After describing the semi-barbarous condition of the Turks in the eleventh and twelfth centuries, he proceeded to give an historical sketch of the Crusades, and described their effect on the art of Europe. The Crusades, which were mere effects, lasted for two hundred years, and the lecturer assigned seven causes which incited the people to enthusiasm on their behalf. Firstly, it was a prevalent belief at the time of the commencement of the Crusades that the end of the world was approaching. The people all believed that they would perish by drowning, and therefore felt that they ought to do something to redeem themselves. Secondly, at the Council of Clermont, in 1095, the Pope decreed that all sins committed or to be committed would be remitted to all those who engaged in the Crusades. Thirdly, an element greatly conducive to the popularity of the cause was the establishment, some time previously, of chivalry. Chivalry counteracted the ascetic monastic spirit, and was reactionary in its tendencies; it inaugurated a totally different life to that which the knights had previously lived. Fourthly, the state of society was unsettled, on account of the feudal system. Society was divided into four classes or castes—viz., monks, knights, vassals, and villeins. Fifthly, the clergy had some interest in furthering the enterprise, because the knights, previously to their departure for the Holy Land, invariably bequeathed all their property and land to the Church, which thus became possessed of immense resources. Sixthly, there was famine in this country at the time of the commencement of the Crusades; to such an extent was this the case that human flesh was openly sold in the markets for food. Many of the feudal lords, too, after a manner not unknown in the present day, had impoverished themselves and lost their estates by a species of gambling or betting on the tournaments. This class joined eagerly in the Crusades, for the East was the scene of action, and the traditionary fabulous wealth of the East seemed to hold out to them a ready means of repairing their shattered fortunes. Seventhly, in the small towns the industrial or artisan population joined in the enthusiastic advocacy of the Crusades, although this class did not itself intend to go to the East; the artisans saw that while the enterprise would give a great stimulus to their industrial pursuits, it would also rid them of the "loafers" who were too lazy to work. After alluding to the legend of the Holy Grail, and describing the general state of Europe at this time, the lecturer dwelt on the enormous influence which the Crusades had upon the art of Europe—firstly, by reason of the enormous wealth of which the Church became the depositary; and secondly, the influence of travel. He then came to the subject of the origin of heraldry. As it was extremely difficult (in fact, impossible) to recognise a knight when his vizor was down, it became necessary that each knight should have some distinguishing mark or badge on his shield or standard. In heraldry, the shield was always spoken of as "the field," and its right and left sides were known respectively as "dexter" and "sinister" sides. This shield was apportioned out into parts of various degrees of honour, the top being the most honourable part. The dexter side was the male side, and the sinister side the female side. The top of the shield was known as the "chief," the central point of the shield was known as the nombril point; the bottom part of the shield was called the base. The "ordinaries," or lines dividing the different parts of the shield, were principally the following:—Engrailed, invected, wavy, nebuly, embattled, raguly, indented, cadency, and dovetail. There were two metals, gold (*or*) and silver (*argent*), which also represented yellow and white. *Gules* was red, *azure* blue, *vert* green, and *sable* black. *Sanguine*, *tawney*, or *orange*, were dishonourable colours in heraldry. The lecturer entered very fully into the subject, and showed, in conclusion, that to be a good herald a man must be intimate with all the sciences, such as astronomy, botany, zoology, &c., which were all laid under contribution in heraldry.

Lecture XXXV.

In his thirty-fifth lecture, on Tuesday afternoon last, Dr. Zerffi resumed the subject of heraldry, which, he said, was really part and parcel of Gothicism, although it had received its fullest development in the reign of King James I. The important part played by heraldic devices in architectural decoration was well known. There was a whole row of shields on the façade of the Ducal Palace at Florence. Heraldry, in some form or other, was used in very early times, although that which we now knew as heraldry only dated from Norman times. Xenophon said that the Medean Kings used to have golden eagles on their shields. Suetonius says that Domitian had a golden beard on his shield. The oldest tomb with arms upon it is of eleventh century in date (1010), and this is at Ratisbon. The shield of Achilles, so powerfully and minutely described by Homer, though full of figures, was not, properly speaking, heraldic; neither were the shields described by Æschylus. There were many traces of such shields, though of course less elaborate, found in the catacombs at Rome, and also in Judea, China, Mexico, and elsewhere. But there were marked differences between the heraldry of the ancients and that of the moderns. The principal difference was, that in ancient times colours were altogether unimportant, but colour in Mediæval times formed the most important part of heraldry. The devices of the ancients were most commonly in metal, and in relief, not flat. Ancient heraldry (as distinguished from modern or Mediæval heraldry) had no ordinaries. The principal duties of heraldry are: firstly, blazoning, or the representation of heraldic figures, devices, and compositions. Next comes marshalling, which affects the arrangement of the heraldic compositions; the third duty of heraldry is that of charging. The shields have varied in shape in different periods. Norman shields were long and tapering; plenty of specimens are to be seen in the Temple Church. To these succeeded shields almost triangular in shape, especially during the thirteenth and fourteenth century. Percy's monument in Beverly Minster finely illustrates this kind of shield. In the fifteenth century the shields were shortened almost into a square; these shields had a kind of notch cut in them for the lance to rest in; this notch was called the *bouche*, or mouth. In the fine trussed timber roof at Lincoln's Inn Hall there are carved such shields, the "mouths" having been made to correspond with one another for the sake of symmetry, those in the shields on one side of the hall being on the dexter side, while those in the shields on the opposite side of the hall are on the sinister side. In the representation of heraldic devices by engraving, and without the use of colour, the colours are represented by different kinds of "hatching" or lines. *Gules* (red) is represented by vertical lines; *azure* (blue) by horizontal lines; *sable* (black), by vertical and horizontal lines; *vert* (green), by diagonal lines from the dexter to the sinister side of the shield, and so on. The "fields" were of various shapes, such as the lozenge, barry (divided into a number of bars), paley (divided into a number of pales); barry-bendy, paley-bendy, &c. Animate and inanimate objects were used to a very great extent as charges, men being employed only as supporters, except in some exceptional instances, as, for instance, in the episcopal seals of Salisbury and Winchester.

In the second part of this lecture, Dr. Zerffi took up the subject of Gothic architecture. He said that there was a great number of what might fairly be called sects amongst the admirers and adapters of Gothic architecture. Some were for English Gothic, others for German, and more for French, while Italian and Spanish Gothic had also their devotees. If, however, the Gothic architectural works of the various European countries was closely studied, it would be seen that national peculiarities and characteristic were comparatively trifling; the life and soul of Gothic architecture was owing to the fact that it was a religious, an ecclesiastical architecture. In all the countries in which it flourished, the same religious beliefs were shared in common, and as the ecclesiastics were themselves the architects, spoke one common tongue, and were somewhat migratory in their habits, any great differences between the structures of any two countries was not to be looked for. In England, Norwich, Canterbury, Durham, York, and Glasgow, compared well with such French cathedrals as Notre Dame de Paris, Amiens, Ouen, &c. In fact, any one wishing to get an accurate idea of Gothic architecture as a whole, should study those buildings, together with such buildings as Cologne, Strasburg, S. Stephen's Vienna, Segovia, Toledo, Burgos, Pisa, S. Mark's Venice, &c. In the concluding part of his lecture, Dr. Zerffi pointed out the books which the student of Gothic art could best study.

THE COMPLETION OF S. PAUL'S CATHEDRAL. *

In the form of a letter addressed to one of the members of the committee for the completion of S. Paul's Cathedral, Mr. Street offers his views on the subject. The principle from which he starts is one which we have before laid down,† and to which every one will agree—viz., that restoration or completion ought not to involve any departure from what the architect conceivably or probably would have done himself, if he had had the opportunity, unless a rigid adherence to his intentions would destroy or mar the purpose for which his building was erected and is still used. But while the architectural detail of the fabric should not be touched by the restorer, a greater liberty may with propriety be claimed in dealing with such internal arrangements (of furniture and the like) as may better fit it for its purpose.

Is it then possible, asks Mr. Street, to do much in the way of applying decoration to the walls of S. Paul's without wholly altering the architectural character of the interior? or if success in such a work is attainable, is it not so only by putting on such decorations as Wren himself would have applied? If such a cause were possible—of the contrary of which Mr. Street is convinced—he is still of opinion that its result would be disappointing to all possessed of any artistic feeling. He therefore advises that the walls should be restored to the state in which they were left by the architect, by being cleansed of dirt and whitewash, and that those portions of the building which were from the first plastered — and those only — should be treated delicately so as to harmonise with the natural colour of the stone-work in the walls, piers, and arches about them, and that they should be decorated with care to avoid any contrast of a violent kind with the character of the architectural work.

As an example of the treatment recommended, Mr. Street instances the series of figures in mosaic, clothed in white, and on a gold background, which lines the side walls above the arcades in the church of S. Apolinare Nuovo at Ravenna.

But the great work, and "one fully equal to the exhaustion of all the funds that will be subscribed, may all be done *on the floor itself of the church*, without interfering at all with Sir Christopher's work on the walls, and in such a manner as to ensure that no foreigner shall again enter its doors only to bewail the stinginess and apathy of the people of London and Church of England." In a few words Mr. Street proposes to make permanent provision for two kinds of congregation. To retain the choir as at present, but to erect a second altar and second choir under the dome for use on Sundays and Festivals. The religious reasons for such an arrangement are unanswerable; as things are at present, a worshipper under the dome cannot see the altar, can scarcely hear the priests or choir, and almost inevitably lacks the courage to add his voice to theirs in the services. There can be no doubt but that from this point of view Mr. Street has a strong case. With regard to the architectural merits of his plan, he speaks as follows:—

"If I regard the question from its architectural side, I can conceive nothing more magnificent than the result which might be achieved by the adoption of the alternative plan which I propose. I should put a noble altar under the dome, raised on steps, and covered by a stately and magnificent baldachin or canopy. In front and on either side should be the seats for the clergy and choir, and round them marble choir-screens of moderate height, and covered with any amount of delicate and costly work in mosaic or sculptured bas-relief. To those who know the Cathedral of Florence, the arrangement of the choir under the dome there will be the most apt illustration of the arrangement which I propose. Such a choir would, by itself, eat up no small portion of the funds already at your disposal, and it would be impossible to make it too beautiful or too ornate. It would redeem the whole church from the charge of meanness, just as Orcagna's shrine and baldachin in Or San Michele redeem its poor and uncared-for walls. It would in no way whatever interfere with the original fabric of the cathedral, which would remain in its solemn simplicity of size and chiaroscuro a fitting cover to the central shrine within.

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* Remarks and Suggestions on the Scheme for the Completion of S. Paul's Cathedral, by George Edmund Street, A.R.A. London and Oxford: Rivingtons.

† P. 127, Vol. XIX.

"Such a baldachin as I propose might be largely of metal, or might be sculptured in marble. The shafts which carry it might vie with those of S. Mark's, Venice, and give us illustrations of the Old and New Testament History; whilst the retable behind the altar itself might be of subjects in silver and enamel, in rivalry with that of Pistoia; and the mosaicist might find his employment on the roof and groining of the canopy. The pavements throughout the whole church might well be taken up and replaced with mosaic pavements, like those of S. Mark's, and the small and plain pulpit might give place to one on a larger scale, and covered with sculpture in the fashion of those at Pisa, Pistoia, and Prato; in all cases with such modifications as the style of the church requires.

"With walls cleaned throughout of all whitewash and dirt, and revealing the honest and worthy materials of which they are built, with the choir restored to its original arrangement, with such gorgeous furniture under the dome, and with a noble pavement throughout the whole church, no violence whatever would have been done to any of Sir Christopher Wren's work, and yet the whole interior of the church would impress every one who entered it with the beauty and meaning of its fittings.

"It remains to see how far such a scheme could be carried out without damage to the original provisions made by Wren for what were supposed to be the whole congregational requirements of the church in his time. For my own part, I would religiously preserve here whatever he did. It has throughout, as it seems to me, the impress of his hand, and the mark of his period in our history. It may be retained without loss to religion, and with much gain to the building. It can only be altered or destroyed by men who do not really carry into deeds the principles of reverence for Wren's work with which they set out. The position of the organ is the first point to be considered. Now, as to this, I have always heard that Wren was very careful. He acquiesced in Father Smith's determination that the organ should occupy the place in which, beyond all doubt, its tones produce their greatest effect. But he limited the size of the instrument most carefully, leaving enough space around and above it to allow of suggestions at least of a distant view, and so creating that mystery of things half seen, which, as students of Mediæval art well knew, was the secret of so many of its greatest successes. I would, therefore, most strongly urge upon you the restoration of the organ to its old place, on a screen between the dome and the choir, as a *sine quâ non*, unless you are prepared to ignore what Wren himself did. Such a position would, I believe, be equally useful for the choir proper and for the choir which I propose to form under the dome, and there would be no difficulty whatever in placing it above the dome baldachin, seeing that this would be some distance to the west of it.

"I see that something has been said about dividing the organ in two parts. Now this was not Wren's arrangement. It is not an old arrangement; and, to the best of my belief, it is not a convenient one. Where two organs are used abroad—as, *e.g.* in Toledo Cathedral—they are usually, if not always. two distinct instruments, played by two organists. And where it is possible, no doubt an organ speaks better if open on all sides than if backed by a wall. The entrance to the choir would be, as before, in the centre, east of the marble screens of the dome choir.

"The other most important point is the position of the pulpit. The present position is not bad, but would become unsuitable if a choir were formed under the dome; and I think that in that case the best position for it would be in the form of a grand ambon, against the screen round the choir stalls under the dome. From this point the preacher would command the dome, nave, and transepts, as far as they are within reach of his voice, and would be able to address himself to at least as many hearers as he can at present. In all other respects his hearers would be much better off than now. They would have the choir in their very midst; and the time might come when, at least on great festivals, a devout crowd might be found kneeling before the alter under the dome, and joining in the mysteries celebrated at it, instead of contenting themselves, in the cathedral church of their diocese, with never being present at any but the evening services.

"On one other point I will say but a few words before I close this already too long letter. And this is as to the decoration of the windows. I cannot but feel that the windows at present are a disgrace, and I cannot see that the introduction of colour in them would in any way whatever alter the lines or effects of the building. A spot of light in a building is about as much marked in its effect as is a spot of light tinged with colour. And I would only suggest that the model taken in the style of glass should be the exquisite French work of the sixteenth and seventeenth centuries, of which so much still remains, and of which the most marked features are delicacy of drawing and predominance of white, with very small portions of coloured background."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE last ordinary general meeting of the Royal Institute of British Architects for Session 1870-71, took place on Monday evening last, at No. 9, Conduit-street, the President, Mr. T. H. Wyatt, in the chair. Some special private business having been discussed, it was announced that the President had presented a fine portrait of Mr. Owen Jones, painted by Mr. Phillip. The wish having been from time to time expressed that a collection of portraits of the most distinguished members of the Institute should be formed, the President, on hearing that this portrait was for sale, at once secured it for the Institute, and it is hoped that it will form the nucleus of what may ultimately be a very complete and interesting portrait gallery. The thanks of the Institute were awarded by acclamation to the donor.

Mr. Fowler informed the meeting that the sixteenth annual Conference of German architects would be held about the middle of September next at Carlsrühe.

The following members were then balloted for and declared duly elected:—As Fellow, Mr. J. W. Dennison (Associate), of 33, King-street, Cheapside; and as Associates: Mr. A. B. Denton, of 22, Whitehall-place, S.W.; Mr. F. Haslam, of Henley-on-Thames; and Mr. Mortimer H. Linklater, of Market-road, Manchester.

Mr. Edmund Sharpe, M.A., Fellow, of Lancaster, then gave a lecture

ON CISTERCIAN ARCHITECTURE.

In his preliminary remarks, Mr. Sharpe said that in 1832 he had the honour of holding a Travelling Fellowship in connection with his University (Cambridge), and he took advantage of that circumstance to devote his attention to the study of church architecture, especially that of the Cistercian order of monks. He visited nearly the whole of the Cistercian abbeys of France and Germany, and afterwards those of this country, and at the solicitation of the Council of the Institute, he had consented to state, to the best of his ability, the result of his observations in this particular branch of ecclesiastical architecture. The Cistercian monks, he stated, were an offshoot of the Benedictine monks, and originated in the eleventh century in a kind of reaction amongst some of them, who grieved over the laxity of their order. These reactionists founded a monastery in 1092, in which they lived under more stringent rules. It was to S. Bernard, however, that the vast majority of Cistercian monasteries owed their foundation. In 1170, however, the former laxity of discipline and rule crept in, and showed itself as much in the style of their buildings as in their mode of life. As many as twelve hundred abbeys or religious houses were founded by or under the auspices of S. Bernard, and at the time of the Dissolution there were as many as 3,200 dependencies of S. Ceto. Particularly noticeable was the remarkable uniformity in the style of the buildings erected by the monks of the Cistercian order, the only variations being such as were necessitated by local or other causes, such as differences in the materials available. Mr. Sharpe expressed himself as feeling great difficulty in dealing with the subject in so short an imterval as could then be devoted to his remarks, for the study of Cistercian architecture opened up a wide and rich field for investigation by the lovers of their art. There were exhibited on the walls, in illustration of his remarks, ground plans of eighteen of the Cistercian abbeys, which were in the best state of preservation; but this number, it was intimated, did not represent the one-hundredth of those abbeys which only now existed in a fragmentary condition. In the selection of their sites the Cistercians always chose the valleys, in order to secure retirement and seclusion to the utmost possible extent. There might be instances to the contrary, but they were exceptional, for valleys were chosen wherever possible in view of all the circumstances. They never built any of their abbeys in towns. The statutes of the order contained no special directions as to the amount of decoration which each building should receive. Mr. Sharpe then proceeded to point out and explain, by the aid of the maps and plans upon the walls, the various departments of the monastic buildings, and the uses to which they were devoted. This part of his remarks is necessarily omitted, as being unintelligible without the plans to refer to. From many peculiarities, structural and otherwise, Mr. Sharpe said he had come to the conclusion that the Cistercian monks, during the earliest period of their existence as an order, lived almost in the open air, all the windows being without glass; but towards the fourteenth century they built up the window openings, and had fire-places built in. They made considerable use of the pointed arch, but rarely employed it except where the necessities of construction absolutely required it, using the round arch for all ornamental or purely decorative features, such as arcading, &c. Mr. Sharpe referred to Rievaulx Abbey as being a most beautiful example of Cistercian architecture, and one well worth the attention of the student; in point of fact, many architects who considered themselves full-fledged would do well to study closely these Cistercian abbeys; those gentlemen especially who were so extremely fond of florid ornamentation might learn a valuable lesson or two from such buildings as Rievaulx. There was no tracery used in the windows. Byland Abbey was spoken of by the lecturer as remarkable for purity, simplicity, and dignity. Fontenoy Abbey, the earliest Cistercian erection in France, was stated to be now devoted to secular purposes. After some further explanations of the drawings and plans on the wall, Mr. Sharpe brought his remarks to a close.

The President, having complimented Mr. Sharpe upon his interesting paper, called upon Mr. Street to make some observations.

Mr. G. E. Street, A.R.A., said that the study of Cistercian architecture was an extremely interesting one, inasmuch as in the erections of the Cistercians was clearly to be traced the influence of their rules (which were very strict). The extreme simplicity and severity of their rules led them to avoid display in ornament, sculpture, and figures, and even figures in stained glass, the only exception to this being, to the best of his belief, a painted rood-screen. In the earlier period of the order's existence the human figure was not represented at all. The study of the works of the Cistercians brought one back to true principles of art, as nothing was done for ornament merely, the construction being ornamental of itself. The abbeys of the Cistercians were equal in artistic merit to the best Greek temples, and architects could not study anything better. Nothing could surpass the Yorkshire abbeys. Any architect who would work out the details of these abbeys would be amply rewarded for his pains. S. Ceto Abbey was, he (Mr. Street) believed, quite destroyed. He had been greatly struck with the ignorance prevalent among English architects as to the Scotch abbeys. Those at Melrose and Jedburgh, for example, were very beautiful. Some of the features described by Mr. Sharpe as peculiar to Cistercian abbeys were to be found in Benedictine buildings, such as the triple entrance. The mouldings of the Cistercians were very beautiful, and this suggested the remark that architects who could design good mouldings should not go and get somebody to put bad carving about their work. The works of the Cistercians were grand in their severe simplicity, contrasting all the more markedly with the meretricious productions of the present day. He had great pleasure in proposing a vote of thanks to Mr. Sharpe for his interesting paper.

Mr. J. P. Seddon seconded the proposal, and after adverting to the great labour which had been entailed on Mr. Sharpe in the preparation of the plans and drawings illustrative of the paper, commended the attention of the members to the Welsh abbeys, expressing his opinion that it was quite time some of them were restored.

Mr. Ewan Christian particularly impressed upon the students and the younger members of the profession (of whom there was an unusually large attendance) the advantages which would accrue to them from the diligent study of these beautiful Cistercian abbeys. He concurred with Mr. Street as to the beauty of the mouldings of the Cistercian erections. Some at Rievaulx were as fine specimens of mouldings as human hand could work. It was too much the practice now-a-days to go abroad to pick up "a nice little bit," passing over the beautiful ruins which were to be found within the limits of the United Kingdom. In addition to the beauty of their mouldings, these abbeys were remarkable for sound construction, and, in fact, for everything else that was common sense. He had great pleasure in supporting the vote of thanks to Mr. Sharpe.

After a few observations by Mr. William White, Fellow, and the Rev. E. L. Cutts, F.S.A., the vote of thanks was unanimously accorded to Mr. Sharpe. Mr. Sharpe having briefly replied,

The President announced that that meeting was the last of the somewhat eventful session (as regarded the administration of the Institute) of 1870-71.

◆

STRICTURES ON "A MILLION BLUNDERS."

By Solomon Set-square.

THE generally intelligent daily press is well known to be liable to occasional slips on technical questions; and on hardly any so liable to be misled as on the topic of building. Every one thinks himself capable of discerning what is good or bad in building, or what is good or bad in architecture. We have given our readers from the *Pall Mall Gazette* of the past fortnight a series of letters entitled "A Million Blunders," showing how ignorant of building, and notably of house-building, are builders in general, and cockney house-builders in particular. For our own part, we have, as our readers well know, no special affection for London house-builders. They are scarcely ever architects, or even building contractors; but we are not quite prepared to treat even the speculating builder with the abuse and virtuous indignation lavished on him in the effusions of Mr. Charles Reade, whoever he may be.

According to this gentleman, a builder or a building artificer of any kind is a very depraved and God-forsaken individual indeed. He is throughout the whole of "A Million Blunders" held up to public scorn as the "Curse of Families!" not in our capitals, good reader, but in those of our contemporary, who, in his profuse loan of them, seems to our soberer selves to have "put too fine a point" on Mr. Reade's objurgations. Our old friend, *the speculating builder*, is bad enough in all conscience—in fact, we give him up altogether if it comes to making him a hero or a model of anything imitable; but we decline altogether to join in Mr. Reade's condemnation of him in this style; and in capitals too! Here is what he says about lintels: we really had no idea till we came upon Mr. Reade and his "Million Blunders," that lintels were such very execrable things, used, as they generally are, with incombustible relieving arches:—"All doors and doorways ought to be arched, for two reasons—first, the arch is incombustible, the lintel and breast-summer are combustible; secondly, the arch, and arched door, are beautiful; the square hole in the wall, and square door are hideous."

"*All* doors and doorways ought to be arched," says Mr. Reade, solving in a trice (*à la* Dr. Sangrado) a question whose solution an educated architect would say depended, both structurally and æsthetically, upon circumstances. Mr. Reade would find, too, that the squareness or roundness of his doorways was a grave question of finance on a plot of leasehold ground; and then (shade of Pericles!) what are we to say of his *dictum*, "the square hole in the wall, and square door are hideous" (!)

He is exceedingly severe upon ceilings, or as he invariably spells them, "cielings," and upon what he is pleased to call "casements," but which we call *sashes*.

Mr. Reade is evidently not an architect, nor yet a builder, nor indeed a practical "curse of families" of any kind, or he would know how to spell "ceiling" correctly; and would hardly commit such a blunder as to term a sash a "casement." With all deference to Mr. Reade, there is nothing particularly unscientific in a sash window. If he had said it is inferior in beauty to the French casement he advocates, we should have agreed with him. He does not commend the hinged casement on the score of superior beauty, but of greater convenience, and—wonderful to say—greater immunity from atmospheric influence (!) Is Mr. Reade not aware that even the French architects commend the *fenêtres à l'Anglais à la guillotine* on the score of mere convenience; and that, as a rule, French casements in England are almost impracticable, owing to the semi-impossibility of making them weather-tight when closed, and their liability to injury from high winds when open, to say nothing of the difficulty of adapting them to the convenient disposal of inside curtains? To talk about what he terms "the one rational window on earth" not being "at the mercy of the atmosphere," is an absurdity.

Speaking of the staircase, Mr. Reade observes:—"Furniture mounting the narrow stairs dents the wall and scratches it; sloppy housemaids paw it as they pass, and their dirty gowns, distended by crinoline, defile it. . . . The cure to this curse is chunam; or encaustic tiles, set five feet high all up the stairs. That costs money! Granted; but the life of a house is not the life of a butterfly." "Furniture dents the wall" is a somewhat hazy expression; as hazy, we fear, as the writer's power of distinguishing a wall from a partition. The "chunam," or encaustic tile suggestion, will scarcely commend itself to speculating builders, too well aware, of what the writer seems quite unconscious, that, with very slight hyperbole, the life of a London house really *is* "the life of a butterfly." It is indeed much too ephemeral a structure to waste purpose-made encaustic tiles upon—that is to say, as a paying investment; and if Mr. Reade cannot make suggestions that will pay, we can tell him it is bootless to write about town dwelling-houses. What, for example, will any house builder—be he even a Kelk or a Cubitt—think of such a suggestion as the following? For our own part, rather than adopt it (with coals in frost at say fifty-five shillings a ton), we'll boldly "go in" for Mr. Moule and his earth closet system at once. Fires kept up all night long, as to be of use they must be, are really articles *de luxe* we stand aghast at. "The water-closet has no fire-place. That is a blunder. Every year we have a few days' hard frost, and then, without a fire in the water-closet, the water in the pan freezes, the machinery is jammed, and the whole family endure a degree of discomfort, and even of degradation, because the builder builds in summer and forgets there is such a thing as winter." Our readers will smile at this gentleman's peculiar notions as to wooden floors, sloping roofs, and fire-escapes (see the two last numbers of the Building News).

As to the wooden floors, we leave the sluicing of bed-rooms with buckets of water to speak for itself. As to the "conical" (or sloping) roof it is, we fear, incurable if, as our sapient critic insists, we are to get rid of "the maddest of all ceilings (or *cielings*)," by introducing over our bed-rooms the open-timbered roof and "a great many cubic feet of air to breathe." The writer seems quite unconscious of the use of ceilings to exclude sound, cold, and heat. Let anyone fancy the outhouse effect of an open-timbered roof to the bed-rooms of an ordinary street house.

"The conical roof," says Mr. Reade, "presses laterally against the walls." What! In an ordinary London dwelling-house? We were under the impression that, in ninety-nine town houses in a hundred, the walls have nothing whatever to do with the pressure of the roof, which rests, not on them, but on wretched framed gutter-plates of timber, extending from front to back of the building, supported on tiers of transverse quarter-partitions, themselves resting upon overloaded wooden joists, running parallel to the gutter-plate; and these in their turn on other partitions similarly borne up, and so on, down into the basement story.

We heartily sympathise with Mr. Reade in all he says subsequently about the inaccessible trap-door in the roof, with its rusty bolt; but, for all that, we shrewdly suspect that he has himself never essayed to pass through it, and to look at, what he so incorrectly describes, the real London dwelling-house roof. Truly

> "Tis a pity when charming women
> Talk of things which they don't understand,"

and the same may really be said of mere theorists, like our sensational critic of the "curse of families," who writes on a subject of which it is quite evident he has no practical knowledge. He writes, amateur as he is, to amateurs; and possibly to their entire satisfaction.

◆

Fatal Fall of a Wall at Plymouth.—For some time past alterations and improvements have been in course of execution at S. Andrew's Churchyard, Plymouth. A new wall has been erected round the yard, and during the night of Thursday week last a number of men were engaged in pulling down the old wall. The men were superintended by Mr. James Terrin, a foreman in the employ of Mr. Pethick, the contractor for the works. The part of the old wall facing Bedford-street was undermined early on Friday morning, and the workmen were engaged in pulling it down and carting it away. Terrin stopped to pick up a stone, intending to throw it into one of the carts, but at that instant a portion of the wall fell, and he was buried beneath it. He was dug out within a few minutes, but died on the way to the hospital. The deceased was forty-seven years of age, and had been engaged for a considerable time in the Brazils superintending the construction of railway works.

Civil Engineering.

◆

TABLES FOR THE COMPUTATION OF EARTHWORK.*

ANY method which will facilitate the accurate computation of earthwork must prove acceptable to that large class of civil engineers who have charge of the construction of our railways.

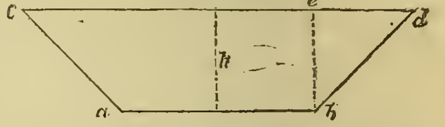
The following method has been in use for some time among a few engineers at the West, but has not become generally known. Its comprehensiveness and accuracy will at once recommend it, as it may be used for *exact computation by the Prismoidal formula;* for an approximation which differs from the Prismoidal formula only by an inconsiderable fraction, and also for computation by "end areas," in the case of preliminary estimates or whenever perfect accuracy is not required.

Let w = width of road-bed.
r = the ratio of side slope.
h = centre height of any cross-section.
l = length of solid whose volume is to be computed.

The area of a level cross-section, as $a, b, c, d,$ (Fig. 1) is

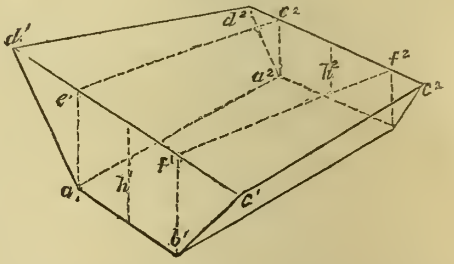
$$\frac{ab+cd}{2}\times h=\frac{\mathrm{W}+\mathrm{W}+2rh}{2}\times h=\mathrm{W}h+rh^2 \qquad (1)$$

FIG. 1.



The volume of any prismoid having level cross-sections is equal to the volume of the frustrum of a wedge, (Fig. 2), $a_1, b_1, f_1, e_1, — a_2, b_2, f_2, e_2,$ plus the volume of two frustra of triangular pyramids $a_1, e_1, d_1 — a_2, e_2, d_2,$ and $b_1, c_1, f_1 — b_2, c_2, f_2.$

FIG. 2



The volume of the frustrum of a wedge is $\frac{1}{2}\,l\,w\,(h_1+h_2)$, and the volume of each frustrum is by the Prismoidal formula

$$\frac{1}{6}\left[\frac{1}{2}rh_1^2+\frac{1}{2}rh_2^2+4\,\frac{\frac{1}{2}r(h_1+h_2)\times\frac{1}{2}(h_1+h_2)}{2}\right]$$
$$=\frac{1}{6}\,l\,\frac{1}{2}\left[rh_1^2+\frac{1}{2}rh_2^2+\frac{1}{2}r(h_1+h_2)^2\right]$$

or, the volume of the two frustra is

$$\frac{1}{6}\,l\left[rh_1^2+rh_2^2+r(h_1+h_2)^2\right].$$

Hence the entire cubical contents of the prismoidal

$$\begin{aligned}\mathrm{C}&=l\left[\tfrac{1}{2}w(h_1+h_2)+\tfrac{1}{6}\{rh_1^2+h_2^2+(h_1+h_2)^2\}\right]\\&=l\left[\tfrac{1}{2}w(h_1+h_2)+\tfrac{1}{6}(rh_1^2+h_2^2+h_1^2+2h_1h_2+h_2^2)\right].\\&=l\left[\tfrac{1}{2}wh_1+\tfrac{1}{2}wh_2+\tfrac{1}{3}rh_1^2+\tfrac{1}{3}rh_1h_2+\tfrac{2}{3}rh_2^2\right]\\&=l\left[\tfrac{1}{2}(wh_1+rh_1^2)+\tfrac{1}{2}(wh_2+rh_2^2)-\tfrac{1}{6}rh_1^2+\tfrac{2}{3}rh_1h_2-\tfrac{1}{6}rh_2^2\right].\\&=l\left[\tfrac{1}{2}wh_1+rh_1^2)+\tfrac{1}{2}(wh_2+rh_2^2-\tfrac{1}{6}r(h_1-h_2)^2\right].\end{aligned} \qquad (2)$$

Let it be noticed that the quantity $\frac{1}{2}(wh+rh^2)$ is the volume of a prism having for its base the level cross-section of centre height h for its altitude *one half foot.*

If we neglect the term $\frac{1}{6}r(h_1-h_1)^2$, and place

$$\mathrm{C}=l\left[\tfrac{1}{2}(wh_1+rh_1^2)+\tfrac{1}{2}wh_2+rh_2^2)\right]. \qquad (3)$$

we shall have the volume of the solid as given by the method known as "averaging the end areas."

If now we divide the quantity represented $\frac{1}{2}(wh+rh_2)$ by 27, thus reducing cubic feet to cubic yards, and tabulate the quantities obtained by giving different values to h in the expression $\frac{\frac{1}{2}(wh+rh^2}{27}$, it is evident that to compute by "end areas" we have only to take the sum of the tabular quantities corresponding to the given centre heights, and multiply it by the length of the prismoid.

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* By George B. Lake, C.E. From *Van Nostrand's Engineering Magazine.*

Suppose the width of road-bed is 14 ft. and the ratio of side slope $1\frac{1}{2}$ to 1. A certain prismoid has level cross-sections with centre heights respectively 4.5 ft. and 2.3 ft.

1.7292 = tabular quantity, corresponding to 4'.5.
7432 = ,, ,, ,, 2'.3.

247.24 = cubic yards in a section 100' long, as given by the method of "averaging the end areas."

By referring to equation (2) we shall see that quantities obtained by this method are, in all cases, too great by a quantity represented by $\frac{1}{6} r (h_1 - h_2)^2$, or, in cubic yards by $\frac{\frac{1}{6} r (h_1 - h_2)^2}{27}$.

If, then, we tabulate in another column quantities obtained by solving this expression for different values of h_1—h_1, we shall readily be able to correct the previous computation.

1.7292 = quantity in first column opposite 4.5.
·7432 = ,, ,, ,, ,, 2.3.

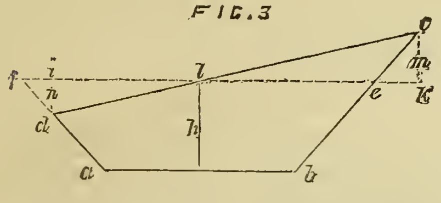
2.4724
0448— ,, second ,, ,, 2.2.

2742 = the true volume of a solid 100′ long, as given by the Prismoidal formula.

We have thus far considered only the case of level cross-sections. If we have the case where there is a transverse surverse surface slope, we must apply another correction, for the area of the cross-section will not be truly represented by the expression $wh + rh_2$.

In Fig. 3 let $a\ b\ c\ d$ be the given cross-section. Draw the horizontal line $f\ e$ making $a\ b\ f\ e$ a level cross-section of the same centre height as that given

FIG. 3



Area $abcd$ = area $abef$ + area lec — area lfd.

Let the difference between the centres and side heights c k and $d\ i$ be respectively represented by m and n, then the

Area $lec = le \times \frac{1}{2}m = (\frac{1}{2}W + rh) \times \frac{1}{2}m$, and
Area $ldf = lf \times \frac{1}{2}n = (\frac{1}{2}W + rh) \times \frac{1}{2}n$.
Area $abef = wh + rh^2$.

$$\therefore \text{area } abcd = wh + rh_2 + \tfrac{1}{2}(\tfrac{1}{2}W + rh)(m - n). \qquad (4)$$

If we multiply both terms of this equation by $\frac{1}{2}$ and divide by 27, we shall have $\frac{\frac{1}{2}abcd}{27}$ = the content of a prism having for its base the cross-section $a\ b\ c\ d$, and for its altitude one half foot.

$$= \frac{\frac{1}{2}(wh + rh^2)}{27} + \frac{\frac{1}{4}(w + rh)}{27}(mn)$$

The first term of the last member of this equation is the same as may be found in equations (2) and (3), from which we obtain the tabular quantities in the first column. The second term is a correction to be applied on account of transverse ground slope.

We place quantities found by giving different values to h in the expression $\frac{\frac{1}{4}(\frac{1}{2}w + rh)}{27}$ in a third column, and thus complete the table.

The term $m-n$ is a multiplier which must be determined in each separate case. If we consider n as negative, when the side-cutting or filling is less than that at the centre, we may place the term under the general form $m + n$.

The following is a convenient form for the tables. Quantities represented by $\frac{\frac{1}{2}(wh + rh^2}{27}$, are placed in column A; those represented by $\frac{\frac{1}{4}(\frac{1}{2}w + rh)}{27}$ are placed in column B; and those represented by $\frac{\frac{1}{6}r(h_1 - h_2)^2}{27}$ in column C.

The column marked Ordinate contains the centre heights.

Base 14*ft.*, *Slope* $1\frac{1}{2}$: 1.

ORDINATE.	A.	B.	C.
0.0	.0000	.0000	.0000
.1	.0262	.0662	.0001
.2	.0530	.0676	.0004
.3	.0803	.0690	.0008
.4	.1081	.0704	.0015
.5	.1366	.0718	.0023
.6	.1656	.0731	.0033
.7	.1951	.0745	.0045
.8	.2252	.0759	.0059
.9	.2558	.0773	.0075
1.0	.2870	.0787	.0093
.1	.3188	.0801	.0012
.2	.3511	.0815	.0133
.3	.3840	.0829	.0156
.4	.4174	.0843	.0181
.5	.4514	.0856	.0208
.6	.4859	.0870	.0237
.7	.5210	.0884	.0268
.8	.5567	.0898	.0300
.9	.5929	.0912	.0334
2.0	.6296	.0926	.0370

THE USE OF THE TABLES.

When the cross-sections are level, take from column A the quantities corresponding to the given centre heights, and from their sum subtract the quantity in column C corresponding to the difference of centre heights.

When there is a transverse ground slope, take from Column A the quantity opposite the first centre height.

Multiply the quantity in column B, opposite this centre height by the algebraic sum of the differences between the centre and side heights ($m + n$), and add the result to or subtract it from the quantity taken from column A according as the value of $m + n$ is positive or negative. Proceed in the same manner with the next cross-section, and from the sum of the quantities thus found subtract the quantity in column C, opposite the difference of central heights.

This gives an approximation which in most cases does not differ essentially from the *exact quantity.*

If, however, it is desired to compute exactly by the Prismoidal formula, when there is a transverse ground slope, proceed as before indicated for the end cross-section. Find a similar quantity for the middle cross-section, as follows. Take from column A the quantity corresponding to the half sum of the centre heights, $\frac{(h_1 + h_2}{2}$ and correct by multiplying the corresponding quantity in column B by half the sum of the values of $m + n$.

Multiply the quantity thus found by 4 and add to the sum of the quantities found for the end cross-sections. $\frac{1}{3}l$ into the sum thus obtained is the *true content* of the solid.

Sta.	Surface.	Grade.	Fill.			$m + n$
			Left.	Centre.	Right.	
1	426.7	428.0	1.9	1.3	0.3	— 0.4
2	427.0	429.0	2.4	2.0	1.8	+ 0.2
3	428.1	430.0	2.4	1.9	1.4	0.0
4	etc.	etc.	etc.	etc.	etc.	etc.

For convenience in computation the value of $m + n$ may be placed in the cross-section book as above.

The determination of the value of $m + n$ is readily understood. At the first station m, the difference between the centre height and the greatest side height is + 0.6. n is — 1.0: hence $m - n =$ — 0.4.

If we assume w = 14ft., and $r = 1\frac{1}{2}$, the computation for the stations given above will be as follows: The quantity in column A, opposite the first centre height, 1.3, is .3840.

The quantity in column B is .0829, which multiplied by — 0.4, the value of $m + n$, gives — .03316 for the correction to be applied to the first quantity. Hence .3508 is the corrected quantity for the first cross-section.

At station 2, the quantity in column A opposite 2.0 is .6296; and the quantity in column B, .0926; giving for the correction .01852, and for the corrected quantity .6481. This added to the quantity previously found gives .9989. Subtract ·0045, the quantity in column C, opposite 0.7 $= h_1 - h_2$), and we have for the volume of the prismoid 1 — 2, 100ft. long, 99.44 cubic yards.

Again, the corrected quantity for station 2 is 6481.

The quantity in column A for 1.9 is .5929 $m + n = o$, ∴ the correction = 0. .6481 + .5929 = 1.2410. Subtract .0001, the quantity in column C, opposite 0.1 ($= h_1 - h_2$), and obtain 124.09 cub. yards for station 2—3.

To compute the tables we may use the formulas before found, but this is a very slow and laborious process. It is much better to use the method of differences, as this is a quicker and easier method, and at the same time incurs less liability of error.

The principles governing this method of computing quantities represented by a formula are well known.

If the expression representing the quantity is of the first degree the first order of differences will be constant, and if of the second degree the second order of differences will be constant, and so on.

Hence we see, that for computing quantities in columns A and C, we shall find the second difference constant. For column B the first difference is constant.

We shall also find that these differences do not vary with the width of road-bed, but only with the ratio of side slope.

The following are the differences for the two slopes most commonly used in this country.

Slope $1\frac{1}{2}$: 1.

Column A, 2nd diff. 0.000555555 +
,, B, 1st diff. 0.0013888888 +
,, C, 2nd diff. 0.0001851851 +

Slope 1 : 1.

Column A, 2nd diff. 0.000370370370 +
,, B, 1st diff. 0.000925925925 +
,, C, 2nd diff. 0.00012345679012 +

It will be noticed that $\frac{1}{6} r (h_1 - h_2)^2$, the expression representing quantities in column C, does not involve w, and therefore the numbers in this column do not vary with the width of road-bed.

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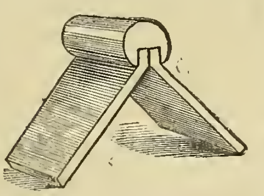
"BANGOR PATENT SLATE RIDGES."

MESSRS. THOMAS AND SON, of Bangor, North Wales, have invented and patented a very useful article for slate ridges. The great advantages, and the very extensive use, of slate ridges, are well known. Some years ago an article was patented by which one of the joints or sides was dispensed with, the roll being attached to the other joint or side, this forming a Λ under the roll. It was fixed or fastened with nails or screws, the heads of which being visible, they were exposed to all weathers, which very soon rendered them loose and leaky. To improve upon this, Messrs. Thomas and Son brought out very lately an invention by which the roll and both sides or wings are virtually in one piece, and there are no points horizontally where the wet has the least chance of effecting an entrance. Instead of a Λ on the under side of the roll, a square groove is made, into which the sides or wings turn up and fit in, as may be seen in the accompanying illustration. This is accomplished by an ingenious contrivance in making the ends of wings turn up at an angle, and fit exactly into the square groove provided in the roll. There are no nails or screws exposed; this class of ridge is therefore kept from such harm as heat and wet can effect. When fixed they are quite independent of any screw, as the wings, when once laid on the roof, become wedged up in the roll, which being very prominent, imparts a bold and handsome finish. As these ridges can be easily and rapidly made by Messrs. Thomas and Son's patent process, we are glad to say they can be produced inexpensively, as there is no waste of stuff involved in the manufacture. We are therefore not surprised to hear that they are being used by some of our chief architects and the Government.



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We regret to learn that Mr. Welby-Pugin received injuries of a more serious nature than was at first anticipated in the recent railway accident near Bletchley, and it has been deemed advisable to remove him to the Continent.

CHURCH OF THE HOLY NAME, MANCHESTER.

By the permission of the architects, Messrs. J. Hansom and Son, of Alfred-place, Thurloe-square, we give this week a double sheet illustration of sanctuary and north transept of this very fine church.

Its chief characteristics are the great width of the nave, and its having, in addition to the usual aisles, a second series, devoted to chapels and confessionals, so that it may be said to be double-aisled. The sanctuary embraces the whole width of the nave, but for an aisle ambulatory at each side and round one end. Terra-cotta has been used for wall linings, screens of chapels, groining, &c., so that there is no plaster work, as ordinarily used.

The organ "loft" and gallery for choir is at the west end, having an area of 42ft. by 27ft., and is groined under at a mean height of 20ft. The extreme interior length is 172ft. 6in.; the length across the transepts, 117ft. 6in.; clear width of nave, 44ft.; clear width of each aisle, 13ft.; width across nave and aisles, 76ft.; chapels, south side, average width, 17ft.; confessionals and cloister, north side, 20ft. There are seven chapels—four opening into the transept—and three on the south side, with a large porch and octagonal baptistry on the same side, all screened off by open tracery of terra-cotta. Eight confessionals, and the great stairs to gallery, are on the north side, screened off in the same way.

The tower is designed for the west-end, but is at present carried up no higher than 80ft.; its complete height will be from 250ft. to 300ft. Its present base, exclusive of buttresses, is 53ft. by 31ft.; it is intended to have the character of the "Great Belfry" of some existing Continental and, no doubt, of English churches of the middle ages.

The height of nave to the ridge of roofs is 105ft.; to ridge rib of vaulting, 75ft.; of vaulting ridge of transepts, 48ft. There is a great west-end entrance from Oxford-road, approached by a double ascent of steps, nine in all, raising the floor of the church about 5ft. from the street.

The main chancel archway embraces the width and height of the nave, but the inner archway is 64ft. high and 25ft. wide. The vaulting groined ribs are of terra-cotta, and the web or filling of hexagonal cellular voussoirs of the same material, of warm buff tint, and bands of darker tint, as shown by the drawing. Each voussoir has a pattern stamped in strong relief on its lower exposed face. The walls are lined with diapered-pattern tiles. The cost of the building so far, without altars and fittings, may be said to be about £25,000.

Mr. Marshall, of the late firm of Ibherson and Marshall (the contractors), is conducting the building in a very satisfactory way, under the able personal superintendence of Mr. James Forth, the clerk of works. Messrs. Gibbs and Canning, of Tamworth, have supplied the terra-cotta.

An exterior view of the building may hereafter be given; but we have had more than one favourable notice of it in our pages, under the head of "Manchester Architecture and Building."

THE ROOD-SCREEN, EXETER CATHEDRAL.

The brief notice in last week's Building News of "A Tour Through Devon One Hundred Years Ago" implied that the old chronicler believed the present rood-screen in Exeter Cathedral was erected on the spot where stood the partition-wall, built in the Puritan period to divide the church into two parts. Whether that may have been the tourist's opinion or not, it cannot (says the local *Gazette*) be the actual fact. In his "History of the Cathedral," when narrating the barbarous treatment of the Speke Chapel at the hands of the Puritans, Dr. Oliver says that in 1657 the east window and Decorated altar-piece of the chapel were swept away to open a thoroughfare "into the great church, or Peter's-in-the-East, partitioned off from West Peter's by a brick wall, erected, plastered, and whitened on both sides by Walter Deehle, at the expense of £150." This innovation, he adds, "was perpetrated in virtue of the Act of the Mayor and Chamber, bearing date 11th August, 1657," but though "the hideous wall of separation was cleared off with the restoration of monarchy, the thoroughfare has continued ever since." This thoroughfare, we may remark in passing, has just been abolished, after existing two hundred and fourteen years. At what time the rood-screen was erected, Oliver confesses his inability to determine, and we do not know that the date has ever been fixed with any certainty. But the screen must have been there when the partition was carried out, and the probability is that the "hideous wall of separation" was built upon the screen, the figure of Our Lord on the Cross, with the Virgin and S. John on either side, having been previously pulled down by the Iconoclasts. The central arch, and the openings and arches on the side aisles, were filled up with the brickwork, and that would certainly exhaust all the £150. The date of the organ is 1665, and the record of the "Tourist," that it "stands where the before-mentioned partition-wall did" is strictly correct, if the wall was erected over and upon the screen, as was no doubt the case. Hook's "Church Dictionary" mentions that in large churches the rood-loft with its screen was usually of stone, sometimes containing a chapel and altar within it, and that these more substantial structures have been almost universally converted into organ lofts. We know that such conversion was effected in Exeter Cathedral in 1665, and Oliver reports that, on the south side of the sceen, in pre-Reformation days, was "the Lady's Altar, often called Bratton's, and on the north side S. Nicholas's." When the Canons' stalls come to be removed, during the restoration now proceeding, we shall probably learn something more about the construction of the screen, and the uses to which it was formerly applied.

ASPHALTE *v.* TRAMWAYS.

A controversy has again cropped on the expediency of tramways for the metropolis. There is no doubt that they are accompanied with advantages and disadvantages. The advantages are patent to any one who has ridden in the tramway carriages, and the disadvantages are equally felt, to judge of publicly-expressed opinions, by others. A correspondent in the *Times* of Tuesday last says, "In driving along the Brixton-road, at each crossing of the rail my phaeton received a violent wrench, sometimes sufficient to loosen the springs from the axles, and constantly jerking the end of the pole against my horses' mouths with such force as to endanger the breaking of their teeth. Besides this, several times while my phaeton was on the rails the tramway carriage came sweeping along, and, as it is impossible to depend on being able to get a carriage quickly free of the tram, I was several times in great peril of being run down.

"Tramways are, no doubt, excellent things in themselves, but those who speculate in them should, in my humble opinion, buy the land on which to make them, as is done by railway companies, and not have the right to profit by roads which are maintained at the expense of the general ratepayers. Tramways have, however, now become totally unnecessary. The Paris pavement, such as has lately been laid down in Leicester-square (which I may remark is not nearly so evenly laid as in Paris) is a tramway in itself, and a tramway for everybody."

Another correspondent in the *Times* on the following day corroborates the above. He says: "My coachman is a good, careful driver, but we have found ourselves more than once nearly at right angles to the road, and the horses all but down, in trying to cross the tramway. I have just had to pay a coachmaker's bill in consequence, and I can promise the shopkeepers in any street where there is a tramway that they will see very few private carriages as soon as the owners have my experience of tramways. Since the introduction of asphalte, tramways are not only useless to every one, but a serious nuisance to a large body of persons."

Another correspondent says: "Crossing and re-crossing, as you are compelled to do, is injury to your horses, as well as destruction to the springs and wheels of your carriage. I have now a fine young horse lame from a twist in the leg occasioned by catching the shoe in the tram. She has been unable to work for three weeks, and, to all appearance, will be as long again or longer before she can be used."

But asphalte roads, like tramways, are accompanied by advantages and disadvantages. The advantages are rapidity of construction, evenness, quietness, cleanliness, durability, freedom from dust, saving of horseflesh, &c.; and the great disadvantage is slipperiness when the asphalte road is damp, It appears to answer very well when it is quite wet or quite dry, but when it is neither wet nor dry, as in humid weather, or after a shower, horses cannot go over it with safety. If any plan could be adopted to obviate this positive disadvantage, a most important problem would be solved. It would be well, therefore, if the asphalte companies would devote all their energies to this essential point. Certainly it is possible for science to ascertain some mode of mixing the material, or adding something to it, to meet the difficulty. Let this be done, and there will be no necessity for tramways, as every street would be a tramway for everybody, and London would be immeasurably improved.

SOCIETY OF ARTS' SOIREE.

The *soirée* of the Society of Arts, at the South Kensington Museum on Friday last, had a full measure of success. About three thousand persons were present. Of all places in London there is none other so fit for such a purpose. Though some thousands are invited, there is abundant room for more, and the collection of interesting objects is so vast under all the Protean shapes which the taste and ingenuity of man has given to matter, that, however frequent one's visits have been, there will always be found something to admire which has previously escaped attention, or again, as special favourites, claim anew our admiration. Moreover, in this great storehouse of art, you have such abundant room to move about, that you are not under the unpleasant necessity, as in other places, of, at every turn, meeting again the same people. Great, however, as were the attractions on all sides to eye and ear, yet many there were who never left their seats the whole evening, intent only on seeing the Royal party. Loyal and affectionate regard for the Royal family is, no doubt, in architectural parlance, one of the surest buttresses of our political edifice; but certainly the vulgar obtrusive manifestation of such feeling as was evidenced at the Society of Arts *soirée* is highly objectionable. Those who first got chairs, as I have said, kept them the whole evening, so that many ladies, utterly worn out with fatigue, sat down on steps or anywhere. And men, too, when the royal personages appeared, utterly regardless of propriety, stood upon their chairs, and drove their eyes through their opera-glasses at them, neither troubling themselves about the feelings of the ladies they were staring at, of those behind them, whose view they were altogether intercepting, or their own ridiculous appearance. Though the Society cannot improve the manners of their visitors, yet this they should on future occasions do: provide more seats for them.

OH, FOR A SEAT!

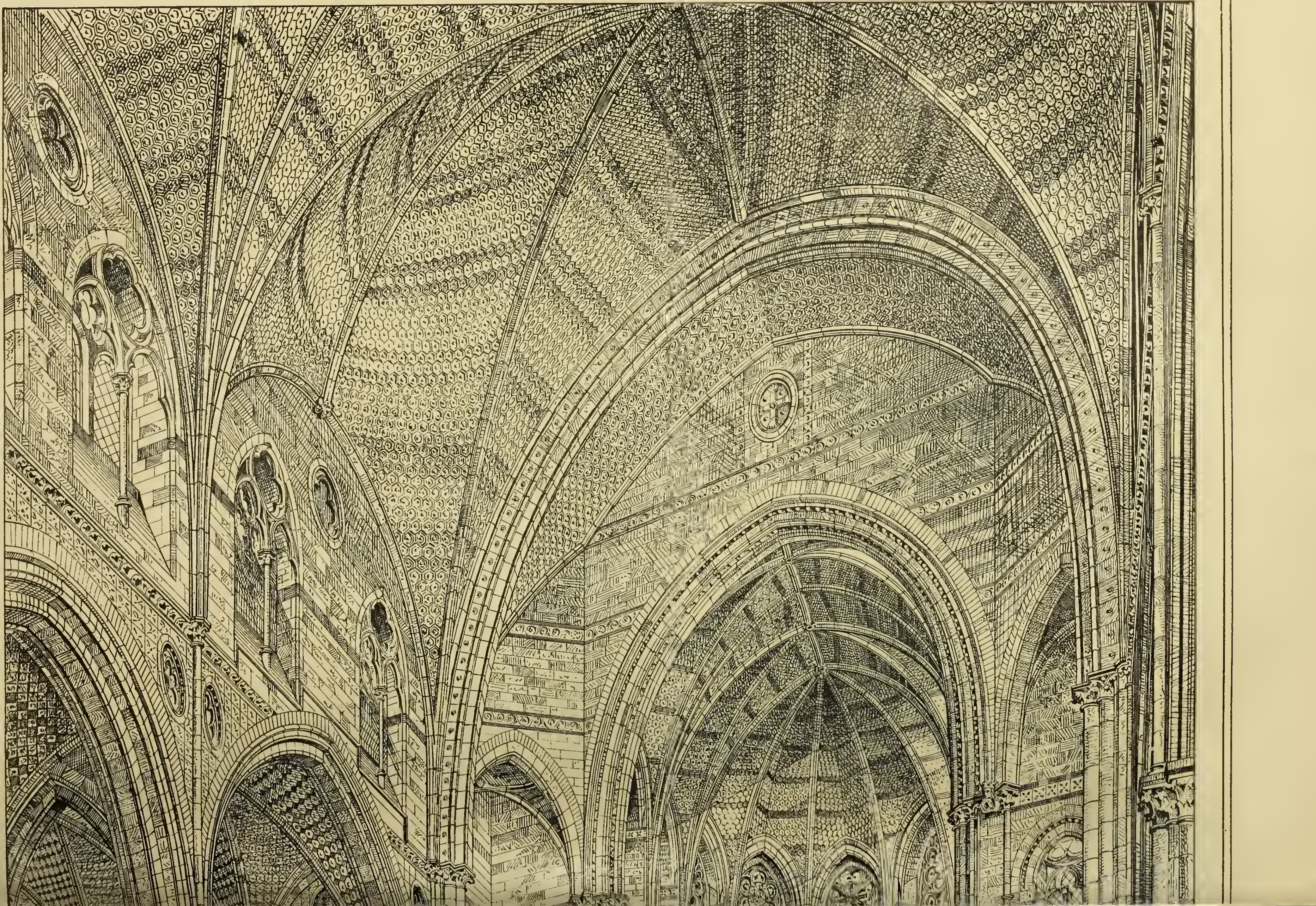
Not in Parliament—not at the School Board, Vestry, or any other exalted seat—but simply somewhere, something on which to rest after, perhaps, miles of weary, hot, and jostling trudging through London streets. Who, asks the *Parochial Critic*, has not seen, with pitying eyes, poor tired respectability of either sex, resting, half ashamed, on a friendly door-step—edge of railing, anywhere, everywhere! and who has not wondered that in the richest city in the world one might wander for miles without a spot on which to rest, without the chance of sitting down?

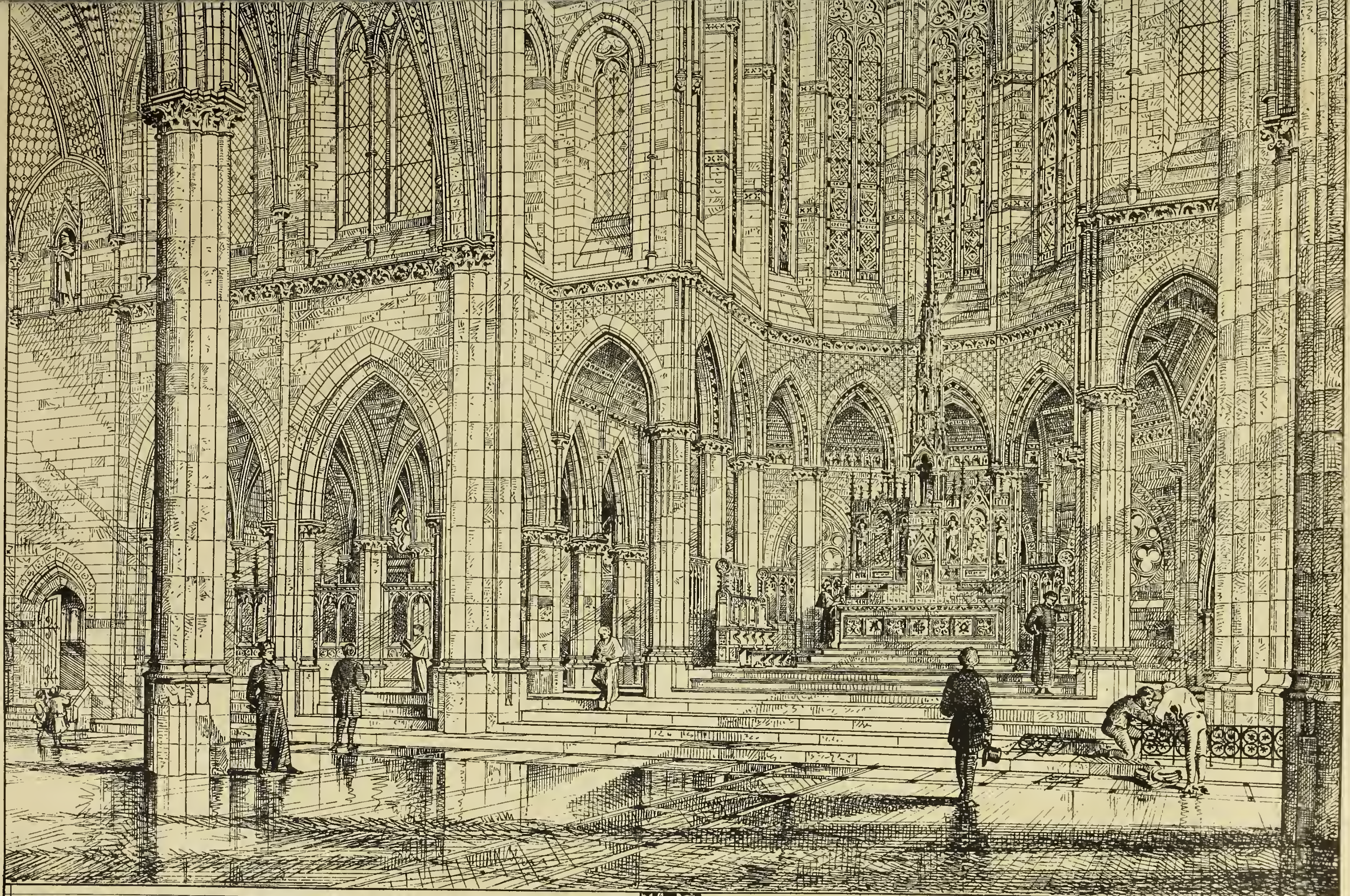
We cannot afford to ride everywhere—we are not all bold enough, or weak enough, to turn into a public-house when faint and weary—and in how many is there even the semblance of a seat? No; they know better—they know it does not pay to provide seats. Now and then, it is true, a windfall in the shape of a forgotten beer-barrel may offer a place of rest, but such a bliss is rare.

Can nothing be done for poor, tired, footsore humanity? Are there no quiet nooks and corners, no recesses, in which a seat might be put? Surely in the squares, at least, there might be a chance of a seat? Would it be too much to ask that in the streets favoured with tolerably wide flags, seats might be placed on the edge of the kerb? Small seats if you will—but still seats. Is there any great objection to a few seats in the squares—quiet resting-places out of the noise—away from the dust? And if a brace of stray lovers *did* coo there, would it matter much? Heavy respectability would be in-doors—in snug arm-chairs—and would, surely, not grudge weary poverty a quiet, welcome rest?

And then comes the question, who's to pay for all this (imaginary) luxury? Well! if some of the rich parishes could not set a good example, there are, God be thanked! many rich and well-known philanthropists who would not be wanting, if the thing is only once fairly started. Remembering, with gratitude, drinking fountains for man and beast—even homes for starving dogs (quadrupeds), one does not despair of even seats! Come forward, ye agitators! Odger & Co., where are you? Here's an opportunity not likely to lack sympathisers, who will assemble "in their thousands." How long will ye be "sat upon" without a chance of sitting? How about your "fundamental principles" now? Here's a chance of a seat which shall immortalise you a thousand times more than all the seats for which you vainly strive! Agitate! Agitate! Agitate! for SEATS!

Supplement to the Building News June 23rd 1871.





View of Sanctuary and North Transept

The Gesu Manchester

Josh A Hansom & Son Architects ·187·

Photo-Lithographed by Whiteman & Bass London

THE LEICESTER MUNICIPAL BUILDINGS COMPETITION.

We have seen the competitive designs sent in for these buildings, and we are sorry that we observed so little worth writing about. It is evident that the jobbery manifest in many recent competitions is bearing its legitimate fruit. The majority of our principal architects will not compete in the absence of some guarantee or strong probability that justice will be done. If it were announced at the time when competitors were invited to send in designs that Mr. G. E. Street, or some other unexceptionable referee, would be consulted by the municipal authorities, and that his advice would in all probability be followed, we have good reason for believing that other architects would have stepped into the Leicester arena, and a very much better exhibition of designs would have been prepared. Though there are four or five good sets exhibited, the majority are below par. Two things forcibly struck us on first walking round the exhibition—to wit, the effrontery of some of the competitors, and the scarcity of good architecture. To follow in the school of certain leading architects is no doubt the best way for young men to become efficient in their art; but to copy, line for line, certain features from certain successful designs of some of our best architects is nothing more or less than robbery. Ever since the publication in the Building News of Mr. Edward W. Godwin's design for the Northampton Town Hall, Mr. Burges's design for the Law Courts, and Mr. Waterhouse's design for the Manchester Town Hall, there has been a slavish copyism which is deplorable, as it evinces an absence of power to think on the part of many of those who may be regarded as the rising generation of architects. Say what we will, architecture is not in a healthy condition in this country at the present time, and the Leicester competition is a proof of it. A few weeks since we published the plan and view of the successful design for Winchester Guildhall. If any one will take the trouble to compare these illustrations with those of the Northampton Town Hall, which appeared in the Building News of November 8th, 1861, he will see at a glance the unacknowledged appropriations of the Winchester architects. Under the motto of "Coritani" some one has gone a step further, and transferred to his drawings, line for line, and to an inch scale, two of the groups of sculpture at the Northampton Town Hall, which we gave in the Building News for November 10, 1865. This is out-Heroding Herod. The plan of the Northampton Town Hall was well suited for its particular site, but quite unfitted for Winchester. The sculptures at Northampton, although illustrative of local history, are so badly executed as to be quite unfit for that or any other building. This piracy is so transparent that a Leicester paper has called attention to it. Less reprehensible is the course pursued by the architect who has adopted "Hôtel de Ville" as his motto. The somewhat squat dormers in Mr. Burges's design for the New Law Courts are reproduced here with a difference, the difference being an exaggeration of the squattiness. Mr. Waterhouse's dormers, which are not his happiest bits, have been similarly travestied, and the hall of Penshurst has contributed not a little to the beauty of the device of the Tudor rose. There are three designs at Leicester well worthy of a long and careful criticism, could we afford the space. We refer to that numbered "1250," one marked with the device of "S. George and Dragon," and "Omnia Vincit Veritas." The two first are badly hung against the light, and especially "S. George and Dragon." "1250" shows the best architecture; "S. George and Dragon" shows the most original and novel treatment; and "Omnia Vincit Veritas" is particularly noteworthy for its simplicity of plan. Of the forty sets of drawings sent in, we are quite sure that there are not more than half-a-dozen that have the slightest claim to the title of architectural designs for an historical building in an historical town. One word more. We protest in the very strongest manner against the fancy points of sight which the majority of the competitors have taken for their perspectives. These drawings are, in fact, delusions. Though there is such a scarcity of good architecture, there is sufficient for Mr. Street to chose from for a good municipal structure. The selection of Mr. Street as referee is an evidence of good faith, and when he has decided—and we have confidence in the justice of his decision—we trust it will not be disturbed by pettifogging local interests.

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THE NATIONAL GALLERY.

THE PEEL COLLECTION.

Every one who can find time or make time should take an early opportunity of visiting the National Gallery, to see the beautiful Peel Collection, which the Government have been fortunate enough to purchase for the nation, and which are now hung in a room by themselves, being the last but one of those in the eastern portion of the building, which was formerly occupied by the Royal Academy. The collection consists of about seventy-five pieces, of which sixty-five are of the Dutch and Flemish schools (chiefly the former). The remainder consists of eight pictures by Reynolds, amongst which are his own portrait, and that of Dr. Johnson, and one by Wilkie, being the well-known engraved picture of "John Knox Preaching before the Lords of the Convention."

But the Dutch and Flemish pictures are in their bulk the chief *pabulum* of the collection, supplying as they do what had hitherto been recognised as a great want in the national collection. No less than eighteen early Dutch painters of the highest rank are now for the first time represented upon the walls and in the catalogue, besides others additionally illustrated by works of beauty and importance. To enumerate some of these:—Terburg is represented by "The Guitar Lesson," an elegant composition, introducing a sample of the artist's well-known skill in painting satin gowns; Adrian Van Ostade, by a most effective piece, "The Alchemist;" Isaac Van Ostade, brother of the preceding, who excelled in landscape subjects—which are rare, however, in this country—by three specimens; G. Metzu, by two of his highly-finished interiors, respectively entitled "A Duet" and "The Music Lesson;" Paul Potter, by a "Landscape and Cattle" piece, which, though small, is interesting as an example of his transcendant art in this line; Jan Steen, the painter *par excellence* of humourous domestic subjects, by "The Music Master," painted in a vein of less broad humour than he generally indulged in, but evincing masterly command of his materials; F. Van Mieris, by a marvellous little interior, in which is a lady in a crimson jacket, feeding a parrot; and William Van Mieris, his son, by an interior of a "Fish and Poultry Shop," abounding in varieties of animal and still life, the textural treatment of which is so admirable as to repay the minutest study; Karel Dujardin, by three elegant landscapes; and Netscher by three works, the most striking of which, perhaps, is that representing children blowing bubbles. Of Dutch artists already partially represented, we have additions of three by Cuyp, four by Hobbema, including a grand landscape, "The Avenue, Midelharnis, Holland," one of several places supposed to have been the birthplace of the artist; two by Peter de Hooge, so unrivalled for his picturesque perspective in interiors of houses and domestic courtyards, and two by Ruysdael.

In the Flemish school we have seven important works by Teniers; a portrait of Vandyck by himself; and two by Rubens, "The Triumph of Silenus," an effective work for its grand sweep of action and the splendour of its colour, which is in a remarkably fine state of preservation—and the immortal "Chapeau de Paille," which, in itself, is a gallery of art, worth a pilgrimage to see. What speaking eyes, what intelligence of expression, what perfection of colouring and flesh modelling, what mastery of the brush in every line! This work was a favourite performance with this great master, for he retained it in his possession till his death, when it passed into that of his son-in-law.

The influence of such examples as this collection comprises upon the student of art, particularly in the favourite walks of *genre* and landscape, cannot be too highly estimated. In one point of view they are particularly interesting and valuable—namely, as illustrating the fact, which was mentioned by Sir Francis Grant, at the last Academy banquet, of the enduring quality which characterises the colours used by the early masters. There they are, after two or three hundred years of exposure, as bright and fresh, and in as sound a condition as the year in which they were painted; whilst in the very same room, Wilkie's "John Knox Preaching," which has been painted only somewhere about forty years, already exhibits symptoms of decay, and of clumsy attempts at restoration. The Council of the Royal Academy propose to establish a Professorship of Chemistry, with especial direction to the preparing of pigments; but we doubt if this will of itself be sufficient to meet the evil. Our painters ought to follow the example of their brethren of old, who mostly were in the habit of grinding and preparing their own colours, and in many cases enjoyed the advantages of special processes, of their own discovery, of which they jealously kept the secret.

In connection with the hanging of the Peel collection, the general arrangements of the gallery in Trafalgar-square have undergone some change, of which it may be as well to say a few words, if only as a protest against the make-shift expedients which have too long prevailed in all that concerns the management of the people's art treasures. In the first place the Turner Collection, which formerly occupied the large western room, has been transferred to the two rooms leading to it, where they hang in juxtaposition with other two rooms appropriated to the very earliest schools of Italian art, so that to stand in a doorway between them affords an effect of contrast more striking than edifying or agreeable. The great western room itself is now filled with a general gathering of works of modern British art, including a few of the Vernon collection, which have been drafted here as an instalment from South Kensington. Italian art intermixed with Spanish prevails generally in all the remaining apartments, with the exception of the penultimate on the eastern side, which is appropriated to the Peel collection, and the last, or grand room, which is chiefly filled with the nation's previous possessions in Dutch, Flemish, and German art. Although the whole suite of apartments in the building as left by Wilkins is thus occupied, the walls are much crowded, many fine works being "skied" so as to be scarcely distinguishable, and with all this, thirty-eight pictures of the masters are still unhung, or have been removed "for want of room," as the catalogue informs us;" but some of them, we fear, on account of having been damaged by cleaning; and then there are the pictures of the British school still detained at South Kensington, which will have to be removed before the national collection can be seen in its own house and in a complete form.

How long is this provoking delay to continue? The Albert Music Hall, and its attendant Albert Memorial being now completed, let us hope that the officials of the Public Works Department may be able to find a little time to bestow upon the public in an affair so nearly affecting its pride and its estimation in the eyes of intelligent foreigners. Indeed, if we are to believe rumour, we are glad to be able to hope that something like a beginning is beginning to be made in this matter. Already the human remains, which filled the site of the workhouse at the back (which was originally a burial-ground), have been carted away to Woking Necropolis; so that any day we may expect to see the builders at work, or, at any rate, to be favoured with some definite information as to the plan of the proposed extension. Let us take the opportunity, ere it is too late, to suggest the necessity of including in the arrangements a certain extent of apartments which shall be side-lighted, for the especial reception of the smaller class of cabinet pictures—Dutch and Flemish particularly—which can best be seen under such conditions, and which are not done justice to when stowed away in large, lofty, top-lighted galleries, often crushed beneath a double line of heavy gallery pictures. We will not at present go into any arguments in support of this position, which, however, will be found amply supported by the example of some of the most eminent Continental galleries, as well as by a careful examination of the effect of the adoption of the contrary practice in the Trafalgar-square Gallery. Let us also hope that when this business is well taken in hand, precaution will be taken to remove from view those ugly chimney-pots and other roof excrescences, which are at once an offence to the sight and an obstruction to the light.

A word before we quit the Gallery about the catalogue, which is a somewhat ponderous volume, and costs a shilling. From time to time, when additions have been made to the collection, a fresh edition has been issued, with the new pictures inserted in their proper places, the artists being arranged in alphabetical order; and the last edition, now before us, is the fifty-eighth. We have a score of earlier editions by us. Now the purchase of an entire catalogue every time of visiting the Gallery to see a few new pictures comes rather costly, to say nothing of the weight to carry, which, to those already familiar with the general collection, incurs unnecessary trouble. Would it not be a good plan, and a great convenience to the art public, to publish occasional supplements, devoted to the new acquisitions, to be sold at a minimum price (say, one penny), the contents being afterwards included in the catalogue itself, which, under such circumstances, need not be reissued so frequently? H. O.

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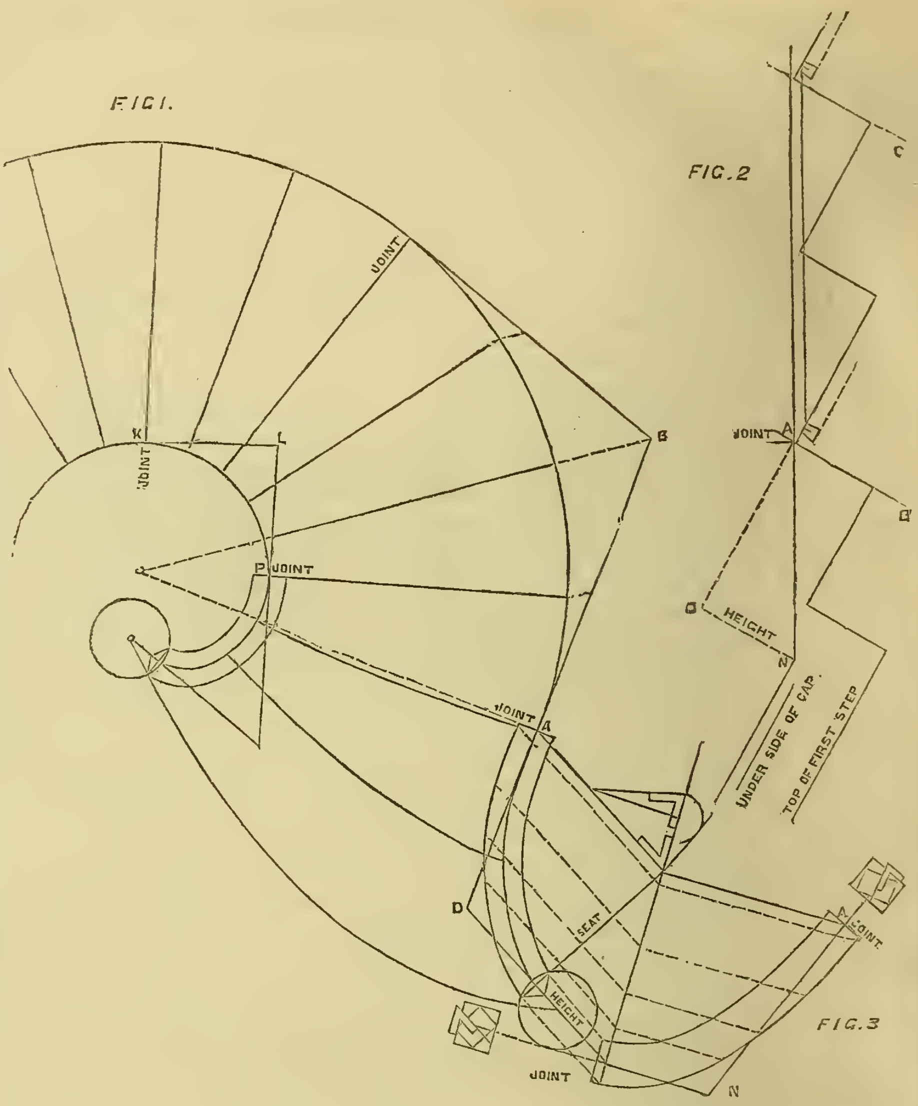
WEST BROMWICH PUBLIC BUILDINGS COMPETITION.

THE annual meeting of the West Bromwich Board of Commissioners has just taken place. The following is the report of the General Purposes Committee:—Acting under the authority of your Board, they requested Ewan Christian, Esq. (architect to the Ecclesiastical Commissioners), to examine and give his opinion upon all the plans sent in for the proposed public buildings. Mr. Christian attended three days, and afterwards forwarded his report upon all the plans; but as he requested that such detailed report should be considered private, your committee do not refer to it further than to say that they have followed it in all respects save one, and with respect to that one the committee have selected one of two designs which had been reported upon by Mr. Christian in equally favourable terms. The detailed report has been seen by most of the Commissioners, and is open to the inspection of those of the Board who have not yet seen it. Your committee recommend the following plans in the order named, and suggest also that the premium for second plan of Town Hall and Library be divided among the two named as second in the proportion of the proposed expenditure, and that this be a condition of the award of second premium. Your committee also recommend that the acceptance of "Compact's" plans of Town Hall, and "A in a Circle" for Free Library, be also conditional upon the architects to whom they belong consenting to the carrying out of such plans only to the extent to which they are selected. Town Hall and Offices: 1st, "Compact;" 2nd, "Progress." Free Library: 1st, "A in a Circle;" 2nd, "Fleur de lis." Markets: 1st, "A in a Circle." Baths: 1st, "Bonâ Fide;" 2nd, "Progress." Subjoined are the names of the successful candidates:—"Compact," Messrs. Alexander and Henman, High-street, Stockton-on-Tees; "Progress," Mr. William Hale, Temple-row West, Birmingham;" "A in a Circle," Messrs. Weller and Proud, Wolverhampton, and Temple-row, Birmingham; "Fleur de lis," Mr. Joseph Hewitt, Edmund-street, London; "Bonâ Fide," Mr. Pincher.

Captain Williams moved the adoption of the report.—Mr. J. A. Kenrick seconded the proposition, and remarked that he was very well satisfied with the report, and was of opinion that the buildings, when completed, would be a credit to the town. He was also very glad that they decided to engage a professional architect, inasmuch as, whatever happened, they could shelter themselves under the reputation of a man of large practice, great knowledge, and architectural ability; and if the ratepayers at any time expressed dissatisfaction with the appearance of the buildings, they could reply that they adopted the best means of arriving at the best conclusion. Mr. Christian went through the plans with very great care and impartiality.—Captain Williams observed that it was rather significant that the plans Mr. Christian had fixed upon were the same as those recommended by the committee, although not in the same order. The resolution was carried.—The following resolution was then passed: —"That the plans of 'Compact,' 'A in a Circle,' and 'Bonâ Fide,' be accepted for the buildings mentioned in the report of the General Purposes Committee, subject to the conditions named in the report, and instructions to architects, and that the second premium be given to the architects named in the same report, and subject to the like conditions." By another resolution the General Purposes Committee were empowered to communicate with the architects of the plans accepted, and to obtain tenders and report to the Board.



NEW ELEMENTS OF HAND-RAILING.—PLATE XXXIV.

NEW ELEMENTS OF HAND-RAILING.*

(Continued from page 459.)

Plate 34.—The Starting of Self-supporting Stairs, having Rails on Both Sides.

FIGURE 1. Nothing can exceed the graceful beauty and grandeur of circular stairs that start with double curves.

No rules can be given for its construction; the workman must exercise his own judgment in laying down a ground plan.

The small circle on the left should be contracted from the third or fourth riser, in order to give the wreath starting a proper easing from the mitre cap. It would be impossible to do this by having all parts of the circle equal distances from its centre.

Tangents P, L, K are drawn for a piece of wreath to stand over five winders. Its pitch regulates that standing from newel.

The wreath for large circle, on the right, stands over four winders; its ordinate being the riser line O B.

To give the construction of these moulds would be simply a repetition of what has already been done for a similar situation of winders. Nor is there anything new in the side wreath starting from newel; it has already been shown in various positions. The explanations, however, may be stated in few words.

Fig. 2 shows the tangent A B and three of the winders unfolded. Draw top of first step. Now fix upon height of newel. Next, draw under side of cap to suit height of newel. Let under side of rail rest on centre of balusters. Set off half its thickness. This having intersected at N, gives height N D and D A as a direction for ordinate.

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* This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

Let A D on the left equal it. This done, fix position of mitre cap. Then draw from D through its centre; this being the ordinate. Make the centre curve tangent to it, and that at A. Set off half width of rail on each side of centre curve. Then draw seat square with ordinate. Let height equal that of D N. Draw the pitch through intersection of seat and line from A.

Complete the mould by drawing a few ordinates.

The line A N, to be correct, must equal corresponding letters on the pitch, Fig. 2.

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A NEW FIRE EXTINGUISHER.

LAST week, at the Graving Dock, Belfast, trial was made of a new fire extinguisher, which has been patented by Messrs. Paton and Harris, of Glasgow. The comparative futility of the efforts of firemen, even with the most powerful steam pumping-engines, to obtain the mastery over an extensive conflagration, has often been commented upon, the firemen frequently having to content themselves with confining their attention to preventing the spread of the "fiery element" (and even this is sometimes more than they can accomplish), leaving the "fire" to "burn itself out." Various reasons have been given for this failure, amongst others, that the flames usually attain to such proportions that when water is thrown *on* them it is resolved into its constituent gases, one of which is the chief supporter of combustion, and, consequently, the intensity of the fire is increased rather than diminished. In the experiment tried last week at Belfast, a barrel, having a false bottom, perforated with holes, was filled with chips and saturated with turpentine; a light was applied, and in a moment the barrel was one mass of flames. The pyroletor, the new instrument referred to, was then set to work, and in a few seconds the flames were completely subdued, and in a few more the fire totally extinguished. The pyroleter, or fire-destroyer, is a machine consisting of two separate pumps of different sizes, acting alternately with a mixing chamber and a separator, by which the gas is separated or set free from water, or steam, or any other liquid. The larger pump draws from a suitable vessel a solution of bicarbonate of soda; the smaller pump draws in a proper proportion of muriatic acid of the usual commercial strength. These pumps alternately discharge their contents into the mixing chamber, where they combine, and flow through a pipe into another vessel or chamber, called a separator, because it retains the water or other liquid, and allows the gas generated to be set free and rise in a dry state to the region or chamber that is in combustion. In the present exhibition we have a barrel with a false bottom, which acts as a separator (in the same way as the dunnage would do in the bottom of a ship), the liquid remaining at the bottom not producing any injury from its small quantity. In a ship, after the fire is extinguished by the pyroletor, this liquid can be removed by the ordinary pumps, as it is only a strong solution of common salt. The gas thus generated is almost identical with the usual choke-damp of mines, which effectually prevents combustion when mixed with the atmosphere in any proportion above twenty per cent. An ordinary-sized pyroletor, having pumps of 4in. and 3in. in diameter, will generate 1,326 cubic feet of gas in one minute. In a close vessel, compartment, or store, even this would speedily fill it up, so that combustion would be impossible, and when the fire was extinguished there would be no injury to the contents, however delicate, from the agent employed. Valuable goods preserved in stores, even the finest silks, would not be in the least injured by the agent. Bales of cotton or jute would be rapidly extinguished, which could not be done with water. Even oil stores might be so constructed that they would be protected in a few minutes by the same means.

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VOLUNTARY ARCHITECTURAL EXAMINATION, 1871.

THE following gentlemen have passed the Preliminary Examination of 1871, at the Royal Institute of British Architects, viz.:—W. E. Brown, of Chelmsford; J. W. Rounthwaite, of Sunderland; E. Square, of Great Percy-street, London; F. P. Johnson, of Bow-road; V. Trubshaw, of Strand, London; W. J. Martin, of Reading; J. Conder, of Strand, London; W. H. Roberts, of Alton, Hants; C. H. Shoppee, of Doughty-street, London; J. Dean, of Barnsbury, London.

No candidates presented themselves for examination in the Class of Proficiency or Distinction.

Furniture and Decoration.

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HARBERTON ROOD-SCREEN.

THE rood-screen in the Church of S. Andrew, Harberton, about three miles from Totnes, has just been restored. The screen is of a description seldom met with elsewhere than in Devonshire, though in that county there are several bearing a marked resemblance to each other, and erected, no doubt, at about the same time—probably the fifteenth century. The screen at Harberton extends across the church, and is open and elegant in its structure. It has now been gilded where it was gilt before, and it is richly painted with green and vermilion, great care having been taken to paint and gild the screen as it was originally. The pulpit is of stone, and did not allow of that elegance of form which some of the Continental pulpits exhibit, which, being made of wood, are elaborate in form and structure; but it is highly ornate. It is octagonal, and has sunken panels in which are seven figures of the Apostles, surmounted with richly-coloured canopies, in perfect keeping in form and colour with the screen. The latter has three divisions; on the north and south side are recesses now used as large family pews, but which were most probably chapels in former times. Separating the sections of the screen are two pillars. In the centre of that on the north side is a figure of our Saviour holding a chalice in his left hand, while his right hand is raised in the act of pronouncing a blessing. This pillar is surmounted with a rich canopy of gold, and a light blue background. Its beauty is much enhanced by the rich vermilion and green that are introduced. There are two openings in the screen, and a central doorway leading into the chancel, with two other divisions. The southern pillar has a painting of the Virgin and Child, copied by Mr. Francis Lane from an original painting by Parmigiano. This is surmounted by a canopy in the form of a throne, similar to those to be seen in cathedrals. The top of the screen, which is several feet broad, is supported by fan-like extensions, with golden bosses, relieved by colours. The top of the screen has for its base a succession of knots in gold, forming a beautiful supporting line; above is a dark ornamented moulding, which serves to throw out another rich line consisting of grapes and vine leaves in green and gold. Above this is a line of vermilion, surmounted by a series of *fleur-de-lis*, forming the base of the grand scroll at the top, in which there are ornaments similar to the lower one, with bunches and vine leaves much larger and more enriched, if possible, than the lower line. The pillars already referred to are extremely handsome in their carving and ornamentation.

Of the pulpit there is a tradition that it was one of the trophies of the Spanish Armada. Its octagonal divisions are ornamented with vine leaves in green and gold, and the figures of the Apostles are clothed in white, generally relieved with golden girdles round their waists. When the screen was first taken in hand it had been subjected to all the destroying effects of time, aided by the barbarity of man in time of war. Some of the old pictures have been worm-eaten, and others had been injured by seats being nailed against them. Hence there was little left to indicate the beauty of the screen in its ancient aspects. The work of re-adorning this section was confided to Mr. Lane, who has placed in its different panels a series of paintings, the subjects being as follows:—On the doors leading to the chancel are groups of cherubim and seraphim, the former accompanying David, whose Psalms will continue to be sung as long as this world shall last, thus rendering him the fittest personification of Praise. A group of seraphim occupy one of the panels, in front of Hezekiah, who is shown in the act of Prayer. North of the centre doors are paintings in separate panels of S. Peter, S. Andrew, S. James, S. Bartholomew, S. Jude, S. Matthias, S. Paul, and S. Stephen, the first of the Christian Martyrs. Then follow four figures to indicate the Christian Virtues: Faith, with a cross; Hope, with an anchor; Charity, with children; Penitence, Magdalene. Next come other figures of the early Christian Martyrs, commencing with that of Justin Martyr, Polycarp, S. Ignatius, of Antioch, and St. Clement, Then come figures of Edward the Confessor, Alfred the Great, Oswald, and Ethelbert. On the south side are figures of S. John, "the disciple whom Jesus loved." Next to him is a figure of S. Thomas, then S. James the Less, S. Matthew, S. Philip, S. Simon, S. Luke, and S. Mark. Then follow four figures representing the Christian Virtues—Justice, Mercy, Chastity, and Temperance. Next others of the early Christians: S. Cyprian, Bishop of Carthage, Athanasius, the eldest of the Greek Fathers; S. Chrysostom, called of "the golden mouth," ecause of his extraordinary eloquence; S. Augustine, of Hippo. Next come Henry V., Edward III., Edward I., and, finally, Richard I. There are in all fifty panels, each of which contains one or more figures. The repairs of the woodwork and the carving at the extreme top of the cornice, which is new from end to end, have been done in a most satisfactory manner by Mr. Stephen Varden, of Harberton, and the painting and gilding by Mr. Roberts, of Exeter, the whole of the cost having been borne by Mrs. Wynne Pendarves, of Tristford.

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PARLIAMENTARY NOTES.

THE DRINKING TROUGH IN PICCADILLY.—Mr. Chaplin, on Thursday week, asked the First Commissioner of Works whether he was aware that a drinking trough had been erected in Piccadilly exactly opposite the new thoroughfare through Hamilton-place; and whether he would take steps to procure its immediate removal to a more suitable locality, less obstructive to traffic?—Mr. Ayrton said that the trough in question had been erected by the hon. member for Weymouth, and had been of great service. The same gentleman had previously erected a trough at Knightsbridge, and it was in such demand that he thought he would erect another on the present site. The site had been selected by the Vestry, who were entirely responsible; and if the Vestry did not approve of the trough now, they might follow the example of the hon. member for Weymouth, and erect another trough at their own expense. If the Vestry should prove obdurate, the hon. member might, at the next general election for vestrymen, propose the election of an anti-trough party for the parish of St. George's, Hanover-square.

THAMES EMBANKMENT.—Mr. W. H. Smith, on Friday, presented a petition from 21,000 inhabitants of Westminster and other parts of the metropolis against the inclosure of certain lands upon the Thames Embankment.

NEW PALACE-YARD.—Replying to Sir D. Salomons on Monday, Mr. Ayrton said it was much to be regretted that in the arrangements which had been made for the Houses of Parliament no shelter had been provided for servants of members waiting with horses and carriages in New Palace-yard. In order to make such provision now, very considerable work would have to be undertaken, and any work in connection with the Houses of Parliament was necessarily of a very expensive character. The opportunity was unfortunately lost last year when arrangements were made for putting up a costly railing round Palace-yard.

THE NEW FOREST.—Mr. Fawcett moved on Tuesday, "That in the opinion of this House, pending legislation on the New Forest, no felling of ornamental timber and no fresh enclosures should be permitted in the New Forest; and that no timber whatever should be cut, except for the purposes of thinning the young plantations, executing necessary repairs in the forest, and satisfying the fuel rights of the commoners." The hon. member observed that the destruction of ornamental timber which had taken place in the New Forest was utterly lamentable; but much as had been done to destroy the beauty of its scenery, it still must be considered to be one of the most beautiful spots in England, and what he desired was, that the House should express an opinion that until the Government had had an opportunity of legislating on the subject, no further destruction of the picturesque and beautiful should be permitted to take place. As the Government intended, he believed, to accept his motion, he would not detain the House, except for the purpose of referring to one matter—namely, a minute which had been issued by Mr. Howard, the representative of the Woods and Forests, which conveyed an impression to some hon. members that even if this resolution were passed it would produce no practical effect. But he (Mr. Fawcett) could not help thinking that if that House and the Government unanimously agree to a resolution of the nature of that which he proposed, Mr. Howard, as an official serving under the Government, and representing a department, would not fail to pay attention to it. The hon. member concluded by moving his resolution.—Mr. Clifford remarked that only the other day he was speaking to his illustrious friend, the Poet Laureate, who informed him that he had gone to the New Forest in search of an ancient wood of yews, which had existed there from the time of William the Conqueror, and when he approached the site where he expected this venerable forest should have been, it was not. It turned out, upon inquiry afterwards, that the wood had been felled and sold to a timber merchant at Lyndhurst for the sum of £60. It was of the utmost importance, when marts and manufactories were springing up in almost every direction, that there should be some spot left where the people could resort for that rural enjoyment which the richer classes found in Scotland and on the Continent. (Hear, hear.) They were under deep obligations to the hon. member for Brighton for calling attention to this subject, and the resolution of that House should emphatically declare that there should be no further encroachments upon the New Forest.—Sir C. Dilke proposed, as an addition to the resolution of his hon. friend, "Also, that Denny Wood should be restored to its former condition as open forest land."—Mr. W. Fowler seconded the amendment.—Mr. Baxter stated that any answers he had previously given had not been given upon his own knowledge, but upon statements furnished to him. He agreed with his hon. friend the member for Chelsea that there could be no danger now from young cattle in the wood, and he agreed with his hon. friend that the padlocks of which he had spoken should be removed. He hoped, however, that, as Government and the hon. member for Brigton were agreed as to the motion of the latter the hon. member for Chelsea would not press his motion.—Alderman Lawrence thought that the Crown Commissioners misunderstood their functions, and that there was no difference between the New Forest and S. James's Park, and other of the Crown property. At some future day it would be necessary to have a full discussion on the whole question of the management of the Crown lands.—Lord H. Scott declared that the Commissioners of Woods and Forests had only been able to show a favourable balance year after year by the felling and sale of ancient timber. Some of the finest beech trees in the New Forest had been cut down and sold for firewood. He hoped the Government would satisfy the House that Denny Wood was not enclosed for the purpose of being cut down.—Mr. Cowper-Temple hoped this motion would throw a little light into the recesses of the office of Woods and Forests. The Commissioners of Woods seemed to consider that in the management of some of the most magnificent beech trees that existed in Europe the best thing for the interest of the public was to cut them down and sell them for firewood, and it did not seem to enter into their minds that people cared for ancient forests as places of recreation and enjoyment. No one ventured to say that it was an improper use of public money to purchase landscapes for exhibition in the National Gallery, but according to Mr. Howard it was a failure of duty to the public if any pains were taken or money expended in preserving for the country the finest natural landscape that existed in Europe. The Commissioners seemed to have gone out of their way to select the places where the finest old trees stood in order to replace them with sapling oaks. It was certainly not for the public interest that people should be driven out of England to find picturesque scenery.—Mr. Sclater-Booth said it was the fashion to rail at the Commissioners of Woods and Forests, but they were bound by various Acts of Parliament, and it was extremely unjust they should be found fault with when they were merely doing their duty. On the other hand, the House was continually finding fault with them because the estates under their management did not yield more revenue.—Mr. M. Chambers said it was clear these forests had been mismanaged, and the time had come when every man in that House should get up and cry there should be a new arrangement.—Mr. Fawcett said the hon. member for Chelsea had desired him to say that he wished to withdraw the resolution. The Government had promised to take off the padlocks in Denny Wood. The hon. member would of course have an opportunity of again bringing the matter forward before the end of the session if it were found requisite that he should do so. The amendment was withdrawn, and the resolutions were agreed to.

Hyde Park.—Mr. W. H. Smith drew attention to the neglected condition of portions of Hyde Park. He complained particularly of the manner in which the grass was allowed to be destroyed in the centre and on the north side, and of the removal of turf from parts much frequented by the public in the vicinity of the Albert Memorial.—Mr. Alderman Lawrence remarked that in the centre of the park there was a large sandy desert, which was gradually increasing in size, and existing paths were allowed to be widened and new paths to be worn in all directions.—Mr. B. Hope wanted to see some protection afforted for the ornamental fountain erected on the north side of the park by the generosity of an Indian prince. The spot where it stood was selected by the dirtiest little vagabonds as a playground, the grass was completely trodden away, and the fountain itself was being damaged.—Mr. B. Cochrane did not see how the park could be kept in perfect order while it was made the drill-ground of the metropolis, the playground of roughs, and the meeting-place for Communists. The leases of the small houses east of Albert-gate were about falling in, and the property might be acquired at very little expense for the improvement of the park.—Mr. Ayrton reminded the House that Hyde Park was managed as a whole, and not for the convenience of persons residing on one side of it or on the other. The object was, to afford enjoyment to those who frequented the park from all parts of London. It was easy to complain that in parts the turf did not grow, but that had been the condition of Hyde Park as long as he recollected it, because unfortunately there were many people in a metropolis like this who did not understand that when gravel walks were provided they were intended to be walked upon. Those people seemed to think the only way to enjoy the walk was to take the side of the path, and thus the grass was gradually worn away. The superintendent was a person of the greatest knowledge and experience in the art of gardening, and was well acquainted with the best method of cultivating grass. The part of the park which suffered most from those persons who declined to conform to any arrangements for its general maintenance was that opposite the Marble Arch, and rails were there put up as a suggestion that if the grass were not walked over it would grow. Yet, rather than go round a few yards, people jumped over the rails and destroyed all vegetation. Under the present state of things no possible restraint could be put upon such conduct except turning the offenders out of the park, which, considering the number of gates, would be a very unprofitable proceeding. If only one in a hundred of the frequenters of the park was ill-behaved the effect was very serious; but should the House think it desirable that the parks belonging to the Crown should be treated in the same manner as other inclosures, it would be impossible to make arrangements to keep them in proper order without carrying on a perpetual war with the public by police, iron hurdles, and other means. The parks were intended for all classes, and as a source of pleasure for the children of the metropolis; but as the cost was defrayed out of the public exchequer, the country would naturally object to an unlimited expenditure in pursuing that object. With regard to the complaint of turf being taken from one part for the improvement of another, that was a reasonable and economical mode of proceeding, because turf removed in that way was found to answer best the purpose for which it was intended, and the places from which it was taken could be resown, and in the course of three or four months would produce turf to all appearances as good as it was before. He gave directions to have the inclosure removed from the fountain referred to and a proper paling put round it. With regard to the question of the hon. member opposite (Mr. B. Cochrane), he did not think it was any part of his duty to enter into any speculations. The best thing the inhabitants who wished these houses to be removed could do, was to promote a Bill through Parliament, and pay the expenses themselves.—Mr. G. Bentinck attributed the devastation of the park to the permission to hold public meetings within it.—Lord Elcho thought that a compromise might be made by preserving the more decorative parts from injury. But it was not children alone that required to be looked after. St. James's Park was the scene of scandalous indecencies and bestialities on the part of the roughs of London, and something of the same kind took place in Hyde Park. The First Commissioner of Public Works and the police ought to prevent such scenes.

Metropolitan Building Act (1855) Amendment Bill.—This Bill passed through Committee on Wednesday.

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Grave digging in the Metropolitan Cemeteries.—The labour and expense involved in the preparation of the last resting-places of the departed is perhaps fully comprehended by few. During a recent visit to S. James's Cemetery, Highgate, one of the best of our Metropolitan burial-grounds, we were not a little surprised when the Superintendent informed us that the total length of the graves dug there during the year 1870 was over three miles and a half, or more than twenty thousand feet. Multiply this by the breadth and length of each grave, and an idea may be had of the labour required in one cemetery only before our dust can find kindred shelter.

Building Intelligence.

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CHURCHES AND CHAPELS.

Chiselhurst.—On Saturday week the foundation-stone of a new church was laid at Chiselhurst. It has been designed in the Early Decorated style, and is to consist of nave, with clerestory, aisles, north and south transepts, and chancel, with vestry at the north-east angle. Externally it is to be of Kentish ragstone, in regular courses, with dressings and ornamental parts, to be executed in Bath stone, and the roof to be slated with Whitland Abbey green slates, and purple Bangor slates in alternate courses. The chancel has an apsidal end, with large two-light windows in each compartment. Accommodation is provided for 525 adults. The extreme internal dimension of the church, exclusive of the chancel, is 72ft. by 53ft. The cost of the building is £4,000.

Christ Church, Dublin.—A correspondent says: "The works are commenced. The Synod-hall should be built on the corner ground at east end of the cathedral, and the site proposed by Mr. Street, to do justice to himself and the restoration, remain an open space—and a joy for evermore."

Luddington.—A new church is being erected at Luddington (near Stratford-on-Avon). Tradition has it that Shakespeare took Ann Hathaway to wife at the church which formerly stood here, but there is no record to support it. The church will be 62ft. long in the interior, the nave 22ft. wide, and the chancel 14ft. The design, which is Geometrical Decorated, is by Mr. John Cotton, architect, Temple-row, Birmingham. Messrs. J. and G. Callaway are the builders.

Rock Ferry.—The foundation-stone of a new Congregational chapel was laid on Friday last at Rock Ferry, near Liverpool. The plan consists of a nave 76ft. 9in. long by 48ft. in width, with spacious transepts 25ft. 6in. by 10ft. also large apsidal class-rooms, vestries, and organ gallery, with lecture-hall over, occupying the space which in conformist churches is allotted to the chancel. The main building consists of a nave with aisles and transepts attached, a tower and spire reaching to a height of 150ft. terminating the north aisle at its eastern end, and a south-east apsidal porch and staircase finishing in a like manner the south aisle, leading respectively to a spacious central vestibule. The material employed in the construction is white Stourton stone. with brick for the internal linings; the external face of the walls being of coursed pitch face work and tooled stone dressings. The nave is divided into four bays by ornamental cast-iron columns supporting the roof, which is of a somewhat novel waggon-headed form, and is to be finished entirely of pitch pine. The style of the church is Gothic of the first half of the thirteenth century; and it is designed to provide accommodation for over 800 worshippers. The several works are being executed by Messrs. Booth and Richards, builders, Rock Ferry, from the designs and under the superintendence of Mr. David Walker, of Liverpool.

Shaw.—On Trinity Monday the new parish church of Shaw, Lancashire, was consecrated. The architect is Mr. R. W. Drew, of Manchester. The style is an early type of Decorated Gothic. The church consists of a central tower over the chancel, a nave, with aisles 72ft. long, and 50ft. high to the ridge. The width of nave and aisles is 49ft. The chancel is 39ft. long. There are 750 sittings. The reredos is of Caen stone, richly carved. A cusped arch over the altar is intended to contain a mosaic, but at present a cartoon of the Resurrection, by Messrs. Heaton, Butler, and Bayne, occupies the space. The cost of the church is about £9,000.

S. Peter's, Folkestone.—At this church, which about a year since underwent considerable enlargement and improvement, has been erected a new altar and reredos. The altar, which is built of oak, with the slab of Portland stone, is highly decorated in colour and gold; the front is divided into five double panels, with detached columns between, forming to the front a range of ten panels, which bear painted figures in attitude of prayer, the subjects represented being, on the Gospel side, S. George (warrior), S. Alban (martyr), S. Benedict (monk), S. Chad (bishop); in the central panels, angels bearing golden censers; and on the Epistle side, David (king), S. Catherine (nun), Isaiah (prophet), S. Imalda (infant). The reredos, which is built of Caen stone, has in the centre a deep recess for the crucifix, covered with a projecting canopy, supported by marble columns, and the back filled with mosaic. On each side are three shallow niches, with columns of Irish marble supporting the canopy above, each niche containing the figure of a saint, executed in

Caen stone—viz., on the Gospel side, S. Peter (the patron), S. Dunstan (archbishop), and S. Anselm (archbishop); on Epistle side, S. Gregory (Pope), S. Augustine (first archbishop of Canterbury), and S. Thomas. of Canterbury. The stone figures are from the studio of Mr. Phyffers, of Pimlico; the altar decorations are by Messrs. Leech, of London and Cambridge; and Mr. Slingsby Stallwood, of Folkestone, is the architect from whose design the work has been carried out.

STRADBROKE.—The parish church of Stradbroke, Suffolk, is about to be restored. The building consists of a nave opening with five fine stone Perpendicular arches into north and south aisles, the south aisle being very wide: in fact as wide as the nave itself; north and south porches, west tower, with very fine tower arch, chancel and chancel aisles, and vestry. The date of the entire church, with the exception of a small piece of the chancel, which is earlier, is of the fifteenth century. When restored the aisle roof will be entirely new, moulded and carved, with ornamental spandrels to the ribs of each principal. The chancel roof will also be entirely new. The south porch and vestry will also be rebuilt. The west gallery has been taken down, opening up the fine tower arch already alluded to. The columns and arches of the whole of the inside of the church, many of which have been much cut about, and some almost reconstructed in compo, will be carefully and accurately restored to their original form and mouldings. The chancel arch, being entirely of compo, will be rebuilt altogether. The contract is taken by Mr. Grimwood, of Weybread. Mr. R. M. Phipsou is the architect. The cost of the restoration is estimated at £3,000.

BUILDINGS.

COMMON HILL HOUSE, ILFRACOMBE.—This house has just been erected under the superintendence of Mr. Richard Gane, jun., of Trowbridge, Wilts. The stone used is local, from the Francis quarries, and Bath stone dressings. The whole of the hall is covered with Maw's encaustic tiles, and is lighted by an internal lantern roof. There is a gallery all four sides of the hall, the balusters of which are of carved oak, and which forms the laundry. The chimney-pieces of the main rooms are of alabaster and different coloured marbles, and were executed by Mr. Chapman, of Frome, Somerset, from the designs of the architect. The whole of the interior has been decorated in a costly manner by Mr. Diment, of Bristol. The contract for the building, as also the stables, coach-house, and lodge, was taken by Mr. Scamp, of Ilfracombe, and the outlay on the buildings was somewhat over £4,000.

CUPAR-FIFE.—Crawford Priory, which, having been unoccupied since the death of its founder, Lady Mary Lindsay Crawford, has fallen into a dilapidated condition, is undergoing extensive alterations preparatory to its occupation by the owner of the estates, the Earl of Glasgow. A large addition has been made at the east side of the building, the most prominent feature of the new work being a Gothic tower with spire 115ft. high. A new carriage porch and vestibule have been erected in front of the entrance facing the south. The eastern side of the main building has all been either remodelled or rebuilt.

MESSRS. BACKHOUSE AND CO.'S NEW BANK, BISHOP AUCKLAND.—On the site formerly occupied by two unpretending-looking buildings in the market-place, known as Messrs. Backhouse and Co.'s Bank, a new Gothic structure has been erected from the designs of Mr. George Gordon Hoskins, F.R.I.B.A., of Darlington. It was opened on the 25th ult. This is the third new bank which Mr. Hoskins has erected for this old firm—viz., at Thirsk, Sunderland, and the one now under notice. It has a frontage of about 50ft., and is from 55ft. to 60ft. in height. The sole contractor was Mr. Robson, of Darlington; the carving has been executed by Messrs. Farmer and Brindley, of London; and Mr. John Hindmarch was the clerk of the works.

PRESTON.—On Friday, the 9th instant, a new School Chapel in S. Thomas's district was opened. The building is a plain neat Gothic structure of brick, cruciform in plan; the total length inside is 67½ft. by 21ft. broad; length across transepts, 42ft. by 21ft. broad. There is a porch at the north-east corner, and a small vestry and porch with cellar under for heating apparatus at the south-west corner. The architects were Messrs. Longworth and Gardner. The cost of the buildings, fittings, retaining wall, fence, and palisade walls, is about £980.

The Society for the Encouragement of the Fine Arts will give a *conversazione* on Thursday next, the 29th inst., in the galleries of the Society of British Artists.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

TO OUR READERS.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

WELLER AND PROUD.—Thanks for cutting, which you will see has been used.

I. C. J.—The article referred to did not come to hand.

RICHARD GANE, JUN.—Lithograph to hand. Cannot promise to give it. Description inserted.

M. GEFLOWSKI writes us to say that his name should be associated with that of Mr. Boulton in connection with the carving of the new church at Charlton Kings, Cheltenham, described in our last number.

C. C. ROLFE.—Your letter is inadmissible in the BUILDING NEWS, because it answers statements and criticisms which appeared in another paper. Probably you have been unfairly treated; but your letter could only be interesting to our readers in as far as it appertained to something which appeared in our columns.

GUNWALLOE CHURCH, CORNWALL.—"One and All" asks will Mr. Sedding kindly oblige the subscribers of the BUILDING NEWS with a sketch and details of this ancient fabric?

S. MARY-LE-WIGFORD, LINCOLN.—In our last issue it is stated that Mr. Pearson was engaged in carrying out the restoration of this church. Messrs. Robert Clarke & Son, architects, of Nottingham, write: "Our plans were selected in a competition, and then referred to Mr. Pearson, who expressed his approval of them, and we are now engaged in carrying them out."

Correspondence.

BRISTOL ASSIZE COURTS.

To the Editor of the BUILDING NEWS.

SIR,—Will you allow me, in justice to Mr. Waterhouse and myself, to correct your account of the reason of the second competition? You state that 'exception was taken to the decision on the ground of some trifling misunderstanding about the exact size of the site." There was no kind of misunderstanding whatsoever; the instructions to architects were clear enough, and in the plan of site sent to each competitor, a narrow strip of ground occurred like the meat in a sandwich, and which we were distinctly told did not belong to the Corporation, and could not be regarded as part of the site. This strip is shown blank in the small plan you published in your number for April 21st, and in the three premiated designs of the first competition this important instruction was rigidly adhered to. Other competitors, however, treated this limitation of site as a vain thing, and coolly appropriated the land that we were distinctly told could not be built upon. The professional referee at once very justly excluded the designs of such competitors, without entering into their merits or demerits as designs. The architects thus excluded were irate; they possessed local personal influence, and then it was that the Corporation proceeded to buy the sandwichy strip of property. Again they sought for designs from the former competitors. I was advised by a distinguished member of the Corporation to compete, and was told that their principal object was to secure an imposing and effective elevation. Competitors were precluded from carrying off more than one premium. A new professional referee was selected, and the city architects were awarded the first premium and the building.—I am, &c.,

EDWARD W. GODWIN.

197, Albany-street, Regent's-park, N.W.
26th June, 1871.

THE PEABODY FUND.

SIR,—The inquiry of your correspondent, "A Citizen of London," in reference to the above, is not made a moment too soon. It would do the Peabody Fund Committee good to hear the remarks of working people about their mode of dealing with the funds entrusted to them so far as they have been dealt with at all, and it would be of service to the entire community if the Proprietor of the BUILDING NEWS, or some other person or body really interested in the true well-being of the working classes of London, would appoint a competent commissioner to inspect and report upon the real issue of what has been done already. It would then, I think, be found that—1. The fund had scarcely touched the case of the really indigent poor. 2. That most of the persons living in the Peabody houses were in regular employ, receiving tolerable wages, whose earnings have no need, or should not have, to be supplemented by charity. 3. That the conditions of the houses although nearly or quite new, is not quite as charming as rose-coloured friends declare. 4. That in some instances they have had the result of raising the rents of other lodgings in the neighbourhood, and causing overcrowding in consequence. 5. That in a commercial aspect "the charity" is a paying speculation, and yet it has tended to diminish the self-respect of many artizans and others, by making an ostensible charity rather respectable than repulsive. 6. That a large number of Mr. Reade's "Million Blunders" will have been found in construction. 7. That the Committee had much better have let the fund alone, or have done something truly efficient with the money.—I am, &c.,

G. M. M.

June 19th, 1871.

XYLATECHNIGRAPHY.

SIR,—In your notice of the process of wood staining with the above unpronounceable name, you call it a new patented process. May I ask Messrs. Trollope what part of this process they claim in their patent? If they have invented some new stain, their claim to that may be valid enough; but if they claim to be the inventors of the process of staining imitation inlaid-woods of various colours on white pine or deal and pitch pine, they are simply in error. At the Art Workmen's Industrial Exhibition, Manchester, 1865, there were several examples of this kind of work, and in fact the same thing has been done for this last thirty years, to my personal knowledge. Were it necessary, I could submit specimens of my own executed by myself more than ten years ago, having seven different colours of stain upon one specimen. In some future paper I purpose describing this process more fully.—I am, &c.,

AN EXPERIENCED WORKMAN.

THE CLAIMS OF PERSPECTIVE.

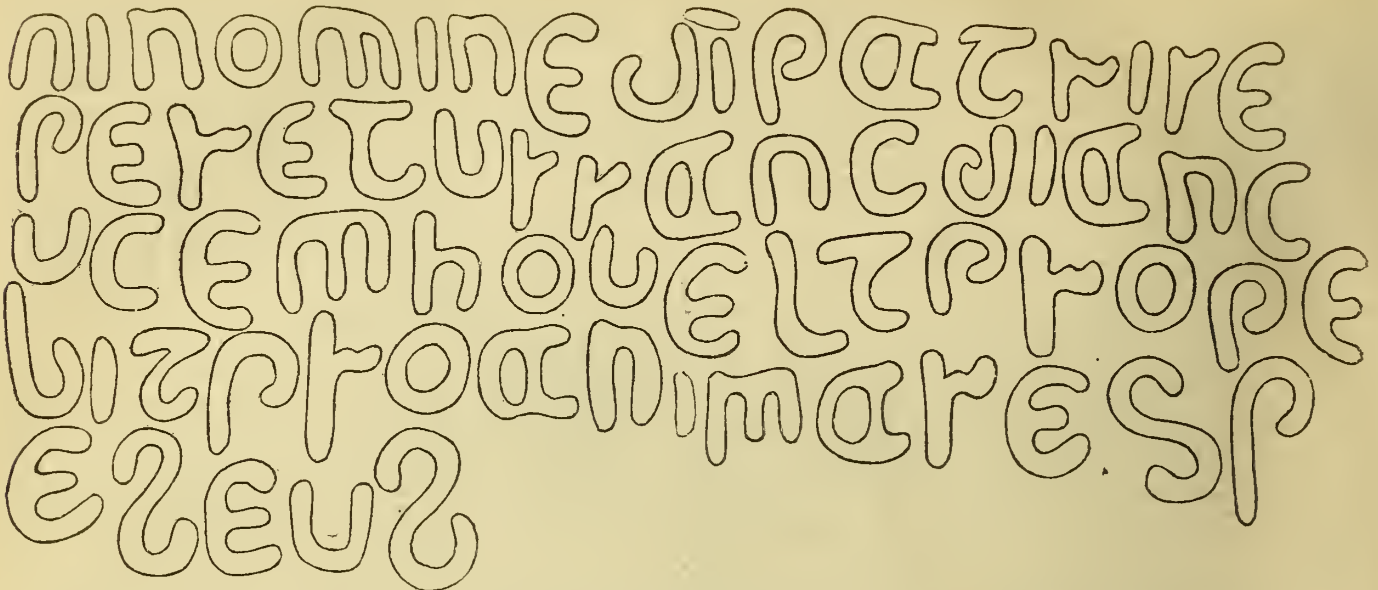
SIR,—With regard to the remarks of Mr. Lockwood in your last, I beg to say that he is in error if he supposes my objections to perspective drawings was against the science *per se*; they were only applicable and strictly limited to the question—"Should perspective views be allowed in competitions?" So far from under-rating perspective, I esteem it most highly, and only wish it was more generally appreciated. Doubtless, it would be well if architects, when designing a building, "thought in perspective;" but a man cannot occupy his mind with what he is ignorant of, and but few architects, strange to say, know aught of perspective. It would be a good plan, too, in designing buildings of any importance, to have trial perspectives made according to the exact conditions of the case, but in a long experience I have never known such a thing to be done. Inasmuch, however, as the system of "oblique," or true perspective, is quite a modern science, and the Mediæval and Classical architects were unacquainted with it, and yet did so well without, it is quite certain that a knowledge of perspective, though highly desirable, cannot be considered as being absolutely necessary. What is really required is to study the sections of the building with sections of the site; these with *diagonal* elevations of the building will be a perfect safeguard against ungainly or otherwise defective design. This very possibly is what the old architects did.—I am, &c.,

P. E. M.

THE LEICESTER COMPETITION.

SIR,—Competitors for the Leicester Municipal Buildings may congratulate themselves that the committee seem disposed to act fairly, by publicly exhibiting the designs, and securing the advice of Mr. Street. The usual efforts from without are being made. I read in the *Leicester Journal* of last Friday, that one correspondent whose taste for art is so comprehensive as to embrace everything, "from a cathedral to a chignon," met several architects in the room, who discoursed to him of the difficulties and disadvantages of the site; while another writer, anxious, no doubt, to save Mr. Street trouble, points out the five designs likely to be selected, and has special commendation for one, and also is of opinion that if two are found of equal merit, then one of Leicester should be preferred. Competitors who know the amount of study required to prepare a design for these buildings can only marvel at the ability which can so soon adjudicate on the merits of thirty-nine designs—an ability which doubtless would have led its fortunate possessor to the same conclusion without any inspection of the drawings whatever.—I am, &c.,

A COMPETITOR.



ANCIENT CROSS AT LLANTWIT.

Sir,—You were good enough to publish some months ago a sketch of an ancient cross at Llantwit, contributed by me to your "Sketch-book" series. A correspondent wrote to ask the meaning of the inscription, but owing to the rubbing I had taken being rather indistinct, I was unable to decipher it. A few weeks ago, however, I had an opportunity of taking a better one, from which the enclosed tracing was made. The letters are as follows:—

NI NOMINE DI PATRIS E(T)
(S)PERETUS SANCDI (H)ANC
(CR)UCEM HOUELT PROPE
(RA)BIT PRO ANIMA RES P(A)
(TR)ES EUS,

which may be rendered thus: "In nomine Dei Patris et Spiritus Sancti hanc crucem Houelt prepavarit pro Res patris ejus." The translation being:—"In the name of the Father and the Holy Spirit, Howel prepared this cross for the soul of Rees, his father."

The cross, it would appear from this, was erected by Howel ap Rees, a prince of some note in the ninth century. Should you think the tracing worth publishing, you are welcome to do so.—I am, &c.,

75, Huskisson-street, Liverpool, J. R. Allen.
June 7th, 1871.

POLICE COURTS, MANCHESTER.

Sir,—In your article on "Manchester," last Friday, you speak of the Police Courts as "*designed* by Travers and Mangles," and "*being finished under my superintendence.*" I feel sure it is only necessary for me to say that this is altogether a mistake, in order that it may be corrected. Certainly I am alone responsible for the design of the Police Courts, whatever may be its merits or demerits.—I am, &c.,

Thomas Worthington.

110, King-street, Manchester, June 15, 1871.

THE ALBERT HALL.

Sir,—The very sensible letter of your correspondent "M." in your last Friday's Building News, contains one or two inaccuracies, which I beg to be allowed to explain. It says that the cost of the alteration proposed—namely, the removal of the platform from the end to the side—would be an insuperable barrier; but that alteration was publicly advocated by me long before the walls were up, and would have cost nothing. Moreover, if the hall is intended to be a paying concern, that change must be made at any cost; while the sale of the organ—a perfect nuisance in all assembly-rooms intended to be used for general purposes—would more than cover the expense.

The hall is far too small for such a colossal instrument, whose only natural position is in the largest of cathedrals. Any one who has heard the performance of the *Miserere* at the Sistine Chapel at Rome, by voices alone, can well appreciate the vast difference between vocal and mechanical music.

The letter also alludes to the device of Colonel Scott to starch and calender the "velarium"—an operation that can have no sensible effect upon the acoustic properties of the elliptic form; it will merely cause additional confusion, for it is a well-known fact that if a speaking trumpet be lined throughout with felt or velvet, its power as a stentorophonic remains uninjured, and also that the echo from a wall or building is wholly uninfluenced by the material of which it is composed or covered.

I could not have expressed my views in regard to the height of the building with clearness, for I merely wished to note that the hall should not have been sunk nearly two stories underground. In fact, in order to reach the "arena," you have to descend a long flight of cellar stairs, walk round an underground corridor illuminated by gas at midday, and then ascend a short flight to gain the floor of the arena, itself much under the natural level of the ground—a most undignified approach to the throne. At the opening, May 29th, her Majesty was seated with her back to the orchestra and the singers, and Madame Lemmens-Sherrington actually performed her magnificent solos over her Majesty's left shoulder.

In all times and countries the approach to important public buildings has invariably been up a flight of steps, more or less magnificent, and it has been reserved for this sensational age to reproduce Gothic barbarisms of Mediæval art, adding thereto the disgrace of making the approach to a noble public building down a cellar staircase requiring gaslight by day—a most felicitous illustration of the *Facilis descensus*, &c.

Our worthy friend the Editor condemns the pseudo-Gothic taste in architecture so prevalent at the present day, but himself commits the inconsistency of heading this paper with barbaric type.

The Gothic "memorial" alluded to by your correspondent was intended to be a beautiful copy of the shrine of a barbaric saint, the figure of the late lamented Prince Consort occupying the central chair; but public feeling has been so strongly expressed, that it is not yet known how or in what manner that monument of expensive and useless decoration can be completed.

Space warns me to conclude, and I must reserve any further observations for a future opportunity.—I am, &c.,
C. E.

Reading, June 20.

AN OPINION ON THE "APOCALYPSE" OF ALBERT DURER.

Sir,—I think your correspondent with reference to this print, which appeared on June 2, is a little mistaken as to the value your subscribers will set upon it. For my part, I think it is much too stupendous a subject to be represented in this small space, and too awful a one to be caricatured thus. I cannot think I am the only one of your subscribers who thinks so.

June, 1871. A Very Old Subscriber.

["A Very Old Subscriber" might have favoured us with his name, so that we might attach due weight to his opinion.—Ed.]

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It is expected that H.R.H. the Prince of Wales will honour the approaching *conversazione* of the Institute with his presence. The Gallery of French Art, exhibited by Marnyhac et Cie., will be open, and add, doubtless, much to the amusement of the visitors.

Intercommunication.

QUESTIONS.

[2243.]—**Trapping Cistern Waste Pipes.**—Can any of your readers inform me which is the most efficient means of trapping a waste pipe from cistern? It is no doubt important that these pipes should be trapped, otherwise the drains and sewers are ventilated directly into the space over the water by their means. In your pages I have seen recommended an Antill's D trap, or an ordinary lead bell trap, soldered to the top of the pipe; but the objection to these is, that if the ball valve is properly fixed, no overflow takes place down the pipe, except in case of some accident by which the valve does not shut off when the cistern is full, consequently no water finds its way into the trap, and unless kept continually filled with water, it is no trap at all. Another suggestion is to terminate the bottom of the waste pipe in a siphon pipe or dip-trap; but, unless this bottom trap can be fed with water from some other source, this also fails to be a trap for want of water. The only remedies which I can think of are, with regard to Antill's trap at top, to drill a small hole in the side of the trap to admit the water as it is rising in the cistern, but this hole must be drilled between the level of the bottom of the dip and the level of the top of the trap, and the ball-valve must be so nicely adjusted as not to shut off the water before it rises to this hole. With regard to the trap at the bottom of waste pipe, the remedy is to drill a hole somewhere below the top level of the water in the cistern; this will feed the trap, but it is obvious that this method will cause a large waste of water, as it will be almost continuously running, and unless the water was taken by meter, the supplying companies would properly take objection. This hole should not be extremely small, so that it should not become accidentally stopped.—A. H. B.

[2244.]—**Garth Stone.**—Can any one kindly give the following particulars regarding Garth stone, and also for that from Bramham Moor, Yorkshire? Composition, colour, weight per foot cube, proportion of bulk of water absorbed, weight required to crush a 2in. cube, and general characteristics.—Y.

[2245.]—**Ashlar.**—Will some practical man be kind enough to define the term "ashlar," and the different kinds of masonry to which it is applicable? Can "block-in-course" work be included under the head of "ashlar?" I do not want to be referred to books; doctors differ. I want to know the different classes of work included by masons under that head.—Inquirer.

[2246.]—**Cubing Masons' Worked Stone.**—Can any one tell me the best book or work on cubing up masons' worked stone?—J. & J.

[2247.]—**Hips and Pitch of Roof.**—Could any reader of the Building News kindly inform me of any book in which is given the method of finding the hips and pitch of a roof for drawing purposes?—C. D

[2248.]—**Roof Timbers.**—Will any one inform me of any book giving the ordinary methods of putting on roof timbers, with a table of the scantling required for timbers for various spans and coverings, or any book giving examples of old roofs, with the sizes of the timbers, width of span, &c.?—Student.

REPLIES.

[2237.]—**Floor Construction.**—The boards of a floor are always presumed to be of sufficient strength, but they frequently have very little to spare, and the consequence is, that in situations exposed to much abrasion and traffic, they soon become inefficient. In some of the rooms at the Royal Academy (not an old building), for instance, in Trafalgar-square, the surface was so far worn away as to lay the dowels quite bare. Flooring boards are now generally prepared abroad, in widths of six to seven inches, and of thickness from three-quarters of an inch to an inch and a half. If they are divided so as to be only half the above width, the floor looks better, and the joints open less. Each board, of whatever width, should be capable of supporting the heaviest person, standing on one foot, at the mid-distance between the bearings. A board three inches wide, one inch thick, and one foot from bearing to bearing will endure the test, but have so little surplus strength as to make 1¼in. flooring desirable. If thicker boards were used, the joists might be further apart, and this would more frequently happen except for the sake of the ceiling generally required to be borne by the same joists, and a foot is as much as ordinary laths are adapted for between supports. From considerations of this kind, joists are commonly placed a foot apart. Economy will at once preclude the employment of iron—that is, of wrought iron, and safety shuts out the use of cast. The weight of a floor should be distributed as evenly as possible upon the walls, in order to avoid the fractures and settlements that commonly result from concentrating the stress upon a few points not especially fortified. Girders are a common and fruitful source of such derangements. Wherever timber can be obtained of the requisite dimensions, single joisting is, therefore, to be preferred. A bearing of twenty-seven feet, though approaching the limit, is not impracticable in this method, and joists of yellow Riga or Dantzic fir, 15 × 3, with two ranges of strutting, may be safely adopted.—Trenail.

[2241.]—**Drawing Perspectives.**—With respect to this inquiry, I beg to say that there is no royal road to the mysteries of perspective. It is, no doubt, a trouble to learn it from books, and but few of such works are good. Many of them, written by artists and art teachers, are positively mischievous, from the amazing ignorance of their authors. There is one by Mr. Ruskin, the which, though on perspective, cannot, strictly speaking, be said to have any perspective in it. Such writers, besides their special errors, base their systems on the absurd theory that one side of a building can be seen perspectively diminishing whilst that towards the spectator is in geometrical elevation. Malton's "Perspective" is one of the most able works on the subject. An excellent elucidation of the subject will be found in Gwilt's "Encyclopædia of Architecture," and another in Nicholson's "Architectural Dictionary." Perseverance will overcome all difficulties. —P. E. M.

[2242.]—**Timber.**—"R. P." will find a full answer to his question as to how he is to distinguish Memel and Dantzic from Swedish timber in the Building News for November 29, 1867, January 10 and 24, February 28, 1868.—H.

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Our Office Table.

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The Leicester Town Hall Competition.—A correspondent of the *Leicester Journal* says:—"Like many of my fellow townsmen, I have carefully examined the plans for our new Municipal Buildings now being exhibited. There is a great display of talent, and the labours of Mr. Street will certainly not be light, to decide which is the best, where so many are good. I was much astonished to find on one of them two groups of sculpture, which are exactly like those on the new Town Hall at Northampton. The enlarged sketches on No. 19 are identical in every particular to those that are to be found in the Building News, November 10th, 1865. Surely Leicester can furnish subjects for such groups without copying those and other places."

Plymouth.—The *Western Morning News* says:—"By the removal of the old enclosing wall of the churchyard of S. Andrew's, Plymouth, the effect of the recent alterations in that locality consequent upon the erection of the new Guildhall has been disclosed; much to the satisfaction of the inhabitants generally, not a few of whom have been very agreeably surprised by the extent and character of the improvement effected. The neighbourhood of the church is indeed improved out of knowledge; and, could any old Plymothian of the last generation rise from his tomb in the centre of the churchyard and look around, he would certainly think that his quarters had been shifted."

The North Metropolitan Tramway.—A ride outside one of the cars on the tramway from Moorgate-street to the Angel, shortly after one of the heavy downpours with which we have been favoured during the past and present weeks, has again suggested very strongly the desirability of completing the comfortable accommodation of this means of conveyance, by affording some means of protection for outside passengers. The cushions on the seats were wet through and through, and an attempt to sit on them was rewarded by as complete a wetting of an inconvenient part of one's trousers as might have been obtained by sitting down in a water-butt. It is true, tarpaulins were provided, as on the omnibuses, but it had evidently not entered into the mind of the conductor to use them, and the rest of the journey had to be performed by most of the riders standing, the possession of a long pair of legs alone affording the questionable advantage of a dry but somewhat uncomfortable seat on the rail at the back. Could not some simple and easily-applied covering be devised, that should add to the present comfort of an outside ride shelter in rainy weather? A waterproof awning, something like those on the steamboats, might easily be suspended from the centre of the car, to be unrolled and fastened to stays at the sides when the rain came down.

Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels.—This society held its usual monthly meeting on Monday at the society's house, 7, Whitehall, S.W. Grants of money were made in aid of building new churches at Sheerness, S. Paul, Kent; Dalston, Holy Trinity, London; Derby, S. Ann; Loughton, Essex; Mortomely, in the parish of Chapeltown, Sheffield; and Witton Park, S. Paul, in the parish of Escombe, near Darlington; rebuilding the churches at Butterton, near Leek, Staffordshire; Pitsea, near Rayleigh, Essex; Silian, near Lampeter; and Whitchurch, near Cardigan. Enlarging or otherwise increasing the accommodation in the churches at Alberbury, near Shrewsbury; Ashington, near Steyning, Sussex; Bilton, near Rugby, Kirkby, Overblow, near Wetherby, York; Meysey Hampton, near Cricklade, Gloucestershire; Nutley, near Uckfield, Sussex; Sea View, S. Helen's, near Ryde, Isle of Wight; Saltash, S. Stephen's, Cornwall; Winterbourne Kingston, near Blandford, Dorset; Athelington, near Wickham Market; and Newton Abbott, S. Paul, Devon. Under urgent circumstances the grants formerly made towards reseating and restoring the churches at Luppitt, near Honiton. Devon, and Harescombe, near Stroud, were each increased; a grant was also made from the School Church and Mission House Fund, towards building a school church at Goginar, in the parish of Bangor, Cardigan. The society likewise accepted the trust of sums of money as repair funds for the churches at Eltham, S. Peter's, Kent; and Brownhill, S. Saviour's, in the parish of Batley, Yorkshire.

A Lively Local Board.—There are many of our towns, into the sanitary arrangements of which it is to be hoped that the new Act will infuse a very different atmosphere. Take, for instance, Newtown, a picturesque and thriving place in Montgomeryshire, where the last report of the Local Board of Health states that from one locality, which was most populous, masses of putrid matter, to the extent of 30 or 40 basketfuls a day, were being taken away. And, in the face of this, says the *Food Journal*, the Board defeated a proposal to improve the drainage and scavengering of the town.

Simple Filtering Apparatus.—The *Industrie Blätter* contains the description of a remarkably simple filtering apparatus. A tank is divided into two compartments by a wall made of wire gauze, two or three inches apart, stuffed with wool ("Scheerwolle,") obtainable at any woollen clothes manufactory. The wool has to be washed out with soda before stuffing, but it matters not what colour it is. In order to prevent a rotting of the wool, it is well to boil it gently with some solution of iron. Wrapped in pieces of coarse linen, it can be easily washed. The turbid water is poured into one compartment of the tank, whence it filters into the other.

Disappointment of Exhibitors at South Kensington.—We have lately seen a handsome marble mantel-piece at the establishment of Mr. A. Tagnon, of 137, Gray's-inn-road, which is well worthy of inspection by those who may be disappointed at finding him not represented at the International Exhibition. The mantelpiece, he has informed us, was intended for exhibition, and was accepted by the authorities. Its non-presence there is due entirely to an official blunder, at which he naturally feels disappointed.

Dwellings for the Working Classes.—The annual report of the Metropolitan Association for Improving the Dwellings of the Industrial Classes has been issued. It states that the profits of the year, after paying all interest on borrowed capital, amount to £5,478 1s. 11d.; and a dividend of 4½ per cent. is recommended, leaving a balance of £503 6s. 11d. to be carried to the guarantee fund. New shares to the amount of £1,525 have been taken up during the past year.

National Technical University.—A meeting for the formation of a technical university was held on Tuesday evening at S. James's Hall; Colonel Hogg (chairman of the Metropolitan Board of Works) in the chair. The chairman, after alluding to the advantages of the Education Act, explained that they had met together to encourage and promote the establishment of technical schools. Mr. Brassey, M.P., in a speech of some length, said that he would not venture to advocate this cause on the somewhat narrow ground of the trade of this country. He would rather prefer that this university should be formed on the higher ground of the duty of developing the human mind to the greatest possible degree. An English artisan might probably produce a certain commodity as good as that of his neighbour, but it was evident that while the intellectual development was deficient mere labour competition was not a proof of superiority. He should like to see technical schools for the benefit of artisans instituted all over the country. The following resolutions were adopted:—"This meeting, having heard the expositions given by the speakers on the want of technical education in England, and the steps which have been taken to rouse the attention of the public to this important question, pledges itself to support the committee of the National University in its further efforts." "In the opinion of this meeting the founding of the proposed National University for technical and industrial training is the best and only plan by which a comprehensive and efficient system of science and art education may be obtained for the people of Great Britain and her colonies."

Kentish Archæological Society. — The Kentish Archæological Society meet this year at Sevenoaks on the 3rd of August. Knole is to be the centre of their operations, which are to include Chevening, the Mote, Otford, Sundridge, and other points of interest in the neighbourhood. Lord Amherst will preside. The rendezvous is so near town that a large gathering of the metropolitan antiquaries is expected.

Old Kentish Plaster Work.—We recently saw, says the *Guardian*, a cottage in Kent, of, possibly, the Elizabethan period, in which a gable end abutting on the village street was covered with plaster—moulded, not to imitate stonework, but with a pleasing geometrical diaper pattern, slightly sunk into the face of the work. The ornamentation of the Moorish Courts at the Crystal Palace has, no doubt, delayed the progress of taste in this direction by frightening anyone who wished for so showy a method, by the enormous cost incurred.

Statistical Society.—Tuesday, 20th inst., William Newmarch, Esq., F.R.S., in the chair, Mr. Hyde Clarke read a paper on "The Transmissibility of Intellectual Qualities in England." As one kind of test of intellectual exaction, he took the statistics of the writers of books in the Biographia. Of 2,000 authors, 750 were born in country districts, and 1,250 in town districts. Examining the towns and the distributions in them, 333 were allotted to London, 73 to Edinburgh, and 53 to Dublin. The largest numbers in the tables beyond these were found in cathedral and collegiate cities. The deductions he drew were that intellectual activity is distributed unequally, but that it is more among the town or more highly educated population than among the rural populations. He pointed out that the larger the concentrated educated population, the larger is the intellectual development, and he referred to the like examples of Greece, Rome, and modern Europe, where the same law is to be traced. The great modern centres of industry in England occupy a low relative position in the list, and are scarcely to be noticed, but they are now beginning to contribute. He affirmed that the literary class was produced from the educated class, and not from the illiterate classes. While no educational effort will produce men of great genius, he inferred that literary attainments are in relation to literary culture, or the culture of the educated classes, and that by extending education to other classes of the population, the intellectual capacity of the community will be extended, and propagated within certain limits.

Junior Examinerships in the Office of Her Majesty's Works.—At the recent open competitive examination held in London, by the Civil Service Commissioners, for two appointments as above, the undermentioned gentlemen obtained respectively the first and second places—viz., 1st, R. J. Thompson, Royal Engineer Department, Chatham; 2nd, A. L. Edwards, New Cross, London.

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The English Church Union have apparently abandoned their appeal to the Arches Court against the decision of the Chancellor of Exeter in the Lynton Church reredos case. The crucifix and figures have been taken down in the night, and a large brass cross substituted in their place.

Many of our readers will probably remember the beautiful table decorations in silver executed by Christofle to the order of Baron Haussmann for the city of Paris, and which was a chief subject of attraction in our International Exhibition of 1862. We regret to find that this beautiful work was destroyed in the late conflagration at the Hotel de Ville. A loss to civilisation!

Timber Trade Review.

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Prices, June 20:—Christiana second yellow, £6 10s.; Dram second yellow, £6 5s. to £6 10s.; ditto third yellow, £5 15s. to £6 10s.; ditto third white, £5 to £6; Fredrickstadt second yellow, £6 10s.; Gothenburg mixed white, £7 5s.; Gefle mixed yellow, £8 10s. to £12; ditto third yellow, £8 5s. to £10; Kragero mixed yellow, £7; ditto second yellow, £6 12s. 6d.; ditto third yellow, £6; ditto mixed white, £6 to £6 10s.; ditto third white, £5 5s.; Nystadt mill-sawn yellow, £6 15s. to £7; Petersburg first yellow, £12 15s.; ditto first white, £8 to £9; Quebec pine, 12ft. 3 × 11in.: first bright, £19 15s.; first floated, £17; first dry floated, £18; ditto second bright, £13 15s.; ditto third bright, £9 5s.; ditto third dry floated, £9 10s.; Skellefton mill-sawn yellow, £7 15s.; Soderham mixed yellow, £8 5s. to £9 10s.; ditto third yellow, £7 5s. to £9.

Per 120 12ft. 3 × 9:—Quebec first spruce, £16 5s. to £16 10s.; S. John's first spruce, £13 10s. ditto unsorted spruce, £13; Trois Pistoles first spruce, £12 15s. to £15s.; ditto second spruce, £11 10s. to £12.

Petersburg lathwood, £5 5s. to £5 10s. per cubic fathom.

Prepared flooring boards:—Dram first yellow, 1¼in., 11s. 6d.; 1in., 7s. 3d. to 8s. 6d.; ditto first white, 1in. 7s. to 7s. 6d.; ditto second yellow, 1½in., 9s.; 1in., 6s. 6d. to 7s. 6d.; ⅞in., 6s. 3d. to 6s. 9d.; ditto second white, 1in., 6s. 3d. to 7s. 3d.; Fredrickstadt first yellow, 1¼in., 13s. 3d. to 14s.; 1in., 6s. 9d. to 10s.; ⅞in., 8s.; ¾in., 7s.; ditto second yellow, 1in., 8s. to 9s.; ⅞in., 7s.; ditto first white, 1in., 7s. 9d.; ditto second white, 1in., 6s. 9d.

Hull.—Timber per load:—Best Memel, £3 15s.; second Memel, £3; secoud Dantzig, £2 10s. to £2 12s. 6d.; Swedish £2 15s.; Quebec yellow pine, £4 10s.

Timber per cubic foot:—Quebec oak, 2s. 7d.; Quebec elm, 2s. 3d.; Memel logs, 5s.; Quebec birch, 1s. 10d.

Deals per Petersburg standard:—Omega red, £14; Petersburg ditto, £13 10s.; ditto white, £9 10s.; Wyburg red, £10 15s.; Memel seconds, £10; Crown Riga white, £8; Quebec first pine, £19 10s.; Holmsund mixed red, £11; ditto second, £10; spruce, £7 15s. to £8; Uleaborg red, £8 10s. to £9.

Crown Memel staves, £17 per 120.

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Trade News.

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WAGES MOVEMENT.

Leeds.—A meeting of the Leeds master builders was held on Wednesday, to consider the notice received from the carpenters and joiners to reduce the working hours to nine per day, to have 7d. an hour in place of 6½d. per hour, to abolish piece work, and to do away with the system of arbitration adopted some time ago in connection with trade disputes. The meeting was well attended, and an unanimous vote was come to, confirming a previous decision, in which the masters declined to accede to the demands of the men, but agreed to leave the whole question to the Arbitration Board. The notice from the men expires on the 1st July.

Newcastle-upon-Tyne. — The carpenters and joiners have offered to abandon their strike and return to their work on the terms in force previously. But they require that the Belgian joiners who have come over should be sent away, and this the masters altogether refuse to do. An effort was made on Monday to settle the engineers' strike in Newcastle and Gateshead. Mr. Morrison, M.P. for Plymouth, Mr. Pears, secretary of the Social Science Association, and Mr. J. Cowen, M,P., had an interview with the committee of the Nine Hours' League, to ascertain if the dispute could not be referred to arbitration. The committee, however, seems to have made an announcement that the time for arbitration had gone by, and that the men did not intend to resume work until the nine hours' system was conceded. Ten thousand men have now been "out" for a fortuight.

TENDERS.

Brighton.—For additions and alterations to 10, Arundel-terrace, for William Field, Esq. Messrs. Goulty & Gibbins, architects:—

Nell & Tuxford	£500

Brighton.—For finishing two houses in Albert-road, Church-hill Estate, for H. T. West, Esq. Messrs. Goulty & Gibbins, architects:—

Nash & Co.	£318
Nell & Tuxford	307
Baker	277
Bostel & Botting	250

Cheshunt. — For the erection of farm-house on Sir Henry Meux's estato. Mr. Thomas J. Hill, architect:—

Mr. F. Saunders (accepted)	£1400

Chesterfield (Derbyshire).—For the erection of five houses in Gladstone-road, for Mr. H. McLanachan. Mr. S. Rollinsou, architect:—

Excavators', Masons', Bricklayers', Slaters', Plasterers', Smiths', and Founders' Departments.

Forrest	£1090 0 0
Maw	1020 0 0
Wright (accepted)	1011 0 0

Carpenters', Joiners', Plumbers', Glaziers', and Painters' Departments.

Marsden	£818 0 0
Madin	720 0 0
Waite	700 0 0
Rollinson C. (accepted)	654 0 0

Croydon.—For the erection of a villa residence for T. J. Cleaver, Esq. Mr. H. A. Alexander, architect. Quantities by Mr. Henry Laxton:—

Bugler	£3285 18
Rivett	2922 0
Hammond	2975 0
W. H. & J. Mansbridge	2895 0
Glaskin	2774 0
Potter & Ferrige	2478 0
Pavitt	2380 0
Baxter	2215 0

Derby.—For the erection of the free baths, Derby. Mr. Georgo Thompson, borough engineer, architect:—

Fryer	£2,420 0 0
E. Thompson	2,381 0 0
J. W. Thompson	2,233 0 0
Bridgart	1,973 0 0
Dusautoy (accepted)	1,929 0 0

For Ironwork:—

Corbin & Co.	593 5 0
Haywood (accepted)	325 0 0

Enfield.—For the erection of two cemetery chapels, lodge, mortuary, enclosure wall, &c., for the Enfield Burial Board. Mr. Thomas J. Hill, architect. Quantities supplied by Messrs. Osborn & Russell:—

Moreland & Son	£6975
Merrion	6798
Robbins & Co.	6250
Fairhead	5950
Brown & Son	5843
Patman Brothers	5797
Bayes & Rammage	5785
Merret & Ashby	5747
Perry Brothers	5741
Sabey & Son	5683
Field & Son	5555
Axford & Whillier	5474
Gammon & Son	4835

Enfield.—For draining and forming roads of New Cemetery for the Enfield Burial Board. Mr. Thomas J. Hill, surveyor:—

Henry Bugbird (accepted)	£1555

Hailsham.—For the erection of house, and alterations, for T, Martin, Esq.:—

Stonestreet	£1162
Thompson	1080
Avis	1080
Skinner	1075
Peerless	1069
Hounsom	996
Tomkinson	990

Herts.—For alterations and additions to Aldenham Lodge, Herts, for Thos. Bagnall, Esq. Mr. E. H. Horne, architect:—

Phillips & Son	£2710
Boff	2680
Hill, Keddell & Waldram	2657
Browu	2647
Wicks, Bangs & Co.	2640
Scrivener & White	2588
Bottom	2580
Foster (accepted)	2487

High Wycombe.—For the erection of new school rooms aud turret for Wesley Chapel, High Wycombe. Mr. Arthur Vernon, architect:—

Banghurst	£,1018 2 3
Knight	988 0 0
Cooper	933 0 0
Nash	922 10 0
Reavell	900 0 0
Looseley	840 0 0
Fincher	826 15 0
Woodbridge	820 0 0
Spicer	800 0 0

Hythe, Kent.—For the erection of malthouse for H. B. Mackeson, Esq. Mr. Charles Baily, architect, Newark-on-Trent. Quantities by Mr. Charles Poland:—

Maywood	£3,941 13 0
Bowley	3,850 0 0
Stiff	3,756 0 0
Brooks & Co.	3,746 16 0
Adcock & Rees	3,473 7 0
Holdouns	3,365 0 0
Skippe (accepted)	3.265 0 0

London.—For building three large warehouses in Hansell-street (late Red Cross-square), City, E.C. Mr. Herbert Ford, architect:—

Pritchard	£7,725
Dove Brothers	7,670
Colls	7,640
Turner	7,625
Browne & Robinson	7,534
Higgs	7,480
Conder	7,337
Bird	7,290
Williams & Son	7,253
Hill, Keddell, & Waldram	7,150
Scrivener & White	7,127
Perry & Co.	7,100
Myers & Son	6,975
Perry Brothers	6,917
Gammon & Son	6,862
Henshaw	6,687
Brass	6,670
Stimpson	6,487

Lower Norwood.—For additions and alterations to Park Cottage. Messrs. Goulty & Gibbins, architects:—

Loat & Son	£385

Maidstone.—For alterations to Maidstone Gaol for the Justices of the County of Kent. Mr. Martin Bulmer, surveyor:—

Dover, Dowel, & Co.	£760 0 0
Abnet	587 0 0
Bridge	556 0 0
Cox, Bros.	536 0 0
Holloway	526 17 0
Wallis & Clements	515 0 0
Davis (accepted)	428 10 0

Nottingham.—For the erection of an additional factory and outbuildings for Messrs. J. A. Clarke & Co. Mr. Sidney R. Stevenson, Nottingham, architect:—

Wright & Son	£4950
Bradley & Barker	4648
Marriott & Co.	4570
Stevenson & Weston	4500
Middleton	4410
Wool & Slight	4350
Balker	4320
Dennett & Co.	4295
Bell & Son	4217
Vickers (accepted)	4200

Stevington.—For the restoration of Stevington Church, Bedfordshire. Mr. John Usher, architect:—

	Nave & Aisles.	Chancel.	Total.
Foster	£1085 0 0	£365 0 0	£1450
Edye & Wildman	..	..	1411
Vickers	1002 10 0	247 10 0	1250
Moore	903 0 0	306 0 0	1209
Tooley	967 0 0	220 0 0	1187

Tottenham.—For the erection of fifteen cottages at West-green, Tottenham, for Messrs. Smith & Gale. Mr. F. Boreham, architect:—

Blackmore & Morley	£2,964
Aldous	2,800
Childs & Son	2,550
Rist & Brown	2,400
Winship	2,290
Fouracres	2,237
Coates	2,055
Linzell	1,990
Loft (accepted)	1,880

Wimbledon.—For the erection of a new wing to Mortimer Lodge, Wimbledon Park, S.W. Mr. Herbert Williams, architect. Quantities supplied by Mr. C Reilly:—

Taylor	£823
Turner & Sons	799
Adamson & Sons	777

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BANKRUPTS.

TO SURRENDER IN LONDON.

Dyne, John Edward, Birkbeck-road, Hornsey, builder, June 30, at 11.

TO SURRENDER IN THE COUNTRY.

Berrill, George, Northampton, bnilder, July 7, at Northampton.—Hyde, Charles Renshaw, Chester, engineer, June 30, at Ashton-under-Lyne.—Matthew, Thomas Henry, S. Mawes, builder, June 28, at Truro.

BANKRUPTCY ANNULLED.

Quin, Thomas, Manley-terrace and Rose-terrace, Kennington Park, builder and estate agent, June 16.

PUBLIC EXAMINATIONS.

June 29, T. W. Athorn, Chorlton-upon-Medlock, plumber.—July 14, M. Maxfield, Grassington, near Skipton, stonemason.

DECLARATIONS OF DIVIDENDS.

W. Evans, Neath, plnmber, div. 2s. 8d.; G. Wheeler, West Cowes, builder, div. 1s. 6d.

SCOTCH SEQUESTRATIONS.

Robert Summers, Glasgow, builder, June 29, at 12.—William Murray, Carrington, joiner, June 23, at 2.

PARTNERSHIPS DISSOLVED.

Lynes and Rivett, Ludgate-hill, architects.—Curry and Co., Newcastle-upon-Tyne and elsewhere, timber merchants; Ewing and Forbes, Upper East Smithfield, engineers.—J. and E. Davies, Liverpool, plumbers.—Smith and Chamberlain, Burton-upon-Trent, builders.

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The New Statue at Berlin.—The Prussian correspondent of the *Times*, in some account of the festivities, speaks well of the new statne. The monument of Frederick William III., he says, inaugurated after the entry, is worthy of the progress which the scnlptor's art has made in Germany in tho course of the last generation. The colossal statue represents the King in a General's uniform, with cocked hat and flowing cloak, the costume being exactly the same as that of Wellington at Hyde Park-corner. The monotony of the English statne is, however, avoided by the horse stepping out briskly, and thns occasioning the cloak to catch the breeze and display a portion of the uniform in front. The King, who is with his back to the Museum, and facing the ancient palace of his ancestors, has his right hand extended, as if in the act of blessing the land. He was a real father to his people, and the conscientiousness and kindness which were the distinguishing features of his character are well expressed in the face and attitude of the figure. The monument is 19ft. in height, and the work of Albert Wolff, one of the most skilful pupils of the late celebrated Ranch. It is cast in pale gold-coloured bronze, the same which imparted such extraordinary beauty to the Munich statnary while new. Its pedestal is at present common sandstone, but it will be replaced by a more elaborate one of cast bronze as soon as it can be completed.

Small-pox, Fevers, and Skin Diseases.—The predisposition to is prevented by Lamplough's Pyretic Saline. Agreeable, vitalising, and invigorating, its effects are remarkable in their cure and prevention. Take it as directed. Sold by chemists and the maker, H. Lamplough, 113, Holborn-hill.—[Advertisement.]

THE BUILDING NEWS.

LONDON, FRIDAY, JUNE 30, 1871.

FRANCE AT THE INTERNATIONAL EXHIBITION.

THOUGH somewhat late in the opening of her galleries, France is as splendid as ever in the annexes of the Albert Hall. To look upon her display of beauty, luxury, refinement, and taste, is almost irreconcilable with the remembrance that she is now painfully emerging from the terrors and sacrifices of a mighty war, and that Paris, the producer of so much which is rich and exquisite in the French Courts, is only just closing her miserable account of siege, famine, incendiarism, and ruin. For all the familiar opulence of material, form, and colour is here; works of the most fervid art, gold and silver in sumptuous profusion, the most brilliant and tender enamels, tissues of every delicate fabric, marbles, jewels, and furniture rendering these courts incomparably the most attractive, if not the most substantially meritorious, in the entire Exhibition. Indeed, some of the trophies, wrought in the precious metals by the unsurpassed workmen of the Messrs. Christofle, were actually manufactured while the German cannon were thundering at the gates. Thus elastic is the French character, essentially self-indulgent and addicted to extravagance, so as almost to suggest the Lucretian saying that "their estate runs away, and is converted into Babylonian coverlets." It is especially interesting to observe how these traits have run through their exhibitions invariably. Their galleries, whether of Art or not, are always pictures in themselves, redolent of bright decoration, gorgeous in hue, abundant in gilding, and, as it were, voluptuous with wealth. But it is even more remarkable that France should generally present herself radiant when the ashes of wars and convulsions lie upon her heart and around her borders. In 1851 her preparations for competition against the world were made, while, from the Weser to the Danube, from the Belt to the Caspian, rumours of conflict were rife. Denmark, Holstein, Germany—as then constituted — Prussia, Austria, Hungary, and Italy bristled with armed men. The half extinct crater of Schleswig-Holstein still sent forth from time to time volumes of smoke. The flames were breaking out in Hesse-Cassell, and the struggle was beginning between the houses of Hapsburg and Hohenzollern. This time, however, France comes among us after, and not before—at least so let us hope—a great and bitter agony. But it is time, perhaps, to review the French exhibitors individually. They commit here the fault common to them, of exclusiveness; they shut themselves up (except as regards their sculpture in bronze or marble—and this includes a beautiful statuette of "The Dying Napoleon") within a double screen; yet, in their peculiar region they need not fear, because they are unapproachable. France, for ever haughty, exulting, and self-sustained, may plead a right to be so. Still, in justice to our own countrymen, we must cast a critical glance into the midst of her treasures. They expose the same weaknesses which have uniformly stood in the way of her perfect success. Compact, symmetrical, isolated, arranged to startle and to please, a museum in many parts rather than an exhibition, the French compartments never fail to win a spontaneous suffrage. For example, who can resist the furniture of Fourdinois and Grohé, which was so famous in 1862? It transforms an industrial Court into a palatial drawing-room. Then the tables of the Messrs. Christofle are simply dreams of Aladdin and the Thousand and One Nights. The treasures surrounding these are inestimable. The jewels, with their settings, are of incredible value, while the *parures* of artificial stones—an industry for which Paris is celebrated—might deceive even connoisseurs, hanging round the neck of the modern Aspasia. Passing on, we must once more protest against the assumption that the Sèvres establishment is the finest porcelain manufactory in Europe. It is scarcely superior to that of Moscow. It is certainly inferior, except in point of bulk, to the best productions of England and Italy. We give all praise to the looms of Beauvais and the Gobelins, for their tapestry, some of which requires to be handled before you can believe that you are not looking at colour on canvas; and assuredly nothing can be nobler than the work of the Barbediennes—the rivals of Paillard—in bronze and enamel, but they have long been confessed unchallengeable in every school of metal-work—Mediæval, Renaissance, Oriental, cast, chased, or relieved with tints melted into the cells of copper which enamel artists love to fill with their fancies. Regarding these last a little revelation comes to us. The genius of the old Limoges enamellers is not merely imitated, but emulated, and no sign could be more hopeful. Of course, wandering from these choice examples, to which we shall soon return, we fall among French vulgarities—stupendous patterns for paper-hanging, washy paintings on builders' canvas, gaudy book-binding, prodigal ecclesiastic metal-work, tremendous hammered figures in copper, overladen with gold and deficient in chiselling; and a Parisian goldsmith's specimen, full size, representing no fashions beyond those of Eden, in dully-shining electrotype-plate—a beacon to avoid like a lighthouse in the midst of breakers. The newly-discovered onyx marble from Algeria—discovered, albeit, about ten years ago—is prominent; but it is not marble, it is rather a variety of alabaster, light in weight, and golden of tint, which is peculiarly applicable to decorative purposes, easy to work, and susceptible of a magnificent polish. In fact, it is so plastic that it can be made to dress a statue as the Phidian ivory was dressed in gold, and, moreover, it is available in architecture, as in figures—a contributory, in fact, of parts.

Lampadas igniferis manibus retinentia dextris.

Well, we go on admiring this poetical and industrial art of France—leaving the pictures for a future day. It is very dazzling, but a misgiving comes over us. Do not the French, in their cultivation of art, rather resemble women—of the frivolous order—in their study of dress? They appear to be rarely serious in the pursuit. France, like all other highly-civilised and intellectual lands, has its group of independent workers and thinkers; but, for the most part, the Parisian artist sails with the wind, and even Gustave Doré sacrifices his genius before a shrine unworthy of him. The French, it has been said, are the only nation on earth who cannot endure the ridicule of others, but who love to ridicule themselves. Their grace is that of the Academy; their dignity wants self-forgetfulness; their richness of idea is mostly on the surface; their technical execution is perfect, but without spirit; they seem to have tamed the Fine Arts to their taste, and taste, in France, is always a caprice. So much of it is allegory; so little of it has any moral meaning; it is so often the dead effigy of an idea. But, not to disparage unnecessarily, amid this glow of superb tints we find much work of the true artistic kind, and various in its form. The noble marble chimney-piece sculptured for the bedroom of Madame de Maintenon; a bas-relief copied from the Flora Pavilion of the Louvre; Carpeaux's grand studies in the Tuileries, where the Tuileries now lie in ruin; and the glorious Gothic carvings of those men who laboured when S. Denis was still the consecrated tomb of the French dynasties. It may be a falling off from the pleasure inspired by these triumphs of art to glance at the late inventions of French ingenuity—spiral gear, double joints, Ræmer wheels, a single intermittent gear, spherical cranks, triangular eccentric, wheels only partly cogged, tables, china, theatrical jewellery, more lustrous than any genuine jewellery that ever was, the wooden clocks, the bronze and blue boots with impossible heels, the *farinæ*, the tea and coffee-trays in gold and silver, with their pretty services, the Oriental *juijaries*, reminiscent of Cairo; but even these assortments carry the same character with them; they are luxuriously elegant. Perhaps the variety of the French courts constitutes one of their principal charms. They are canopied as though for a royal visit, they invite the visitor to leisure. There is a piano "mechanique," played like a barrel organ, with a handle, and resonant with a hundred quadrille, waltz, polka, galop, Spanish, Turkish, and opera tunes; there are instruments for regimental music; and there are representatives of Paris, with their best wares, who deserve mention. Barbedienne, foremost, with bronzes, works of fancy, and furniture; Marnyhac, of Paris and Conduit-street, similarly celebrated; Jules Huvy, of the Cité du Trône; Christofle, of course; Dech, famous all over Europe for his ornamental pottery; Corux, Parvillee, Olmade, Madame Sarah Felix, Pitrat, Adam-Garcin, whose sewing-machines are excellent; Hirch-L'Hopital, a perfect Bow-street of dramatic glitter; and Galle-Reinemer, of Nancy, Meurthe, who could adorn at a fortnight's notice all the armies of Europe with stars, crosses, badges, and collars.

The principal chamber of the French Court contains a most fascinating collection of porcelain, jewellery, metal-work, shawls, lace, and enamels. These last are the gems of the exhibition, and the palm is certainly borne away by the celebrated house of Barbedienne. The riches of art, applied to the richest of materials, displayed by them are amazing. The visitor should closely study their Oriental enamels adapted to European taste, parallel with their newest productions in France. Thus, they take a vase of Eastern design and convert it into a lamp, bright as the flame it is destined to emit. There are several Indian, besides two Japanese specimens of this kind; but they are far from approaching the *chefs d'œuvres* of the West, since, though exquisitely fine and quietly toned, they want beauty of outline and brilliance. Those from China are generally barbarous in conception, representing in rude form, often on a scrolled or diapered ground, insects, birds, flowers, and mythical animals, utterly devoid of grace, though the shapes of the vases are sometimes elegant. But it is to China chiefly that the Parisian artists in this department have gone to school, and particularly so for a mastery over the *cloisonné* or cellular style. This, we may as well say, consists of a copper surface, over which is traced a pattern, in wire, beaten into a flat and slender ribbon, and soldered by one edge to the plate. A number of minute and shallow hollows are thus created, into which are poured oxide of lead, and silica, lime, soda, oxide of iron, and cobalt, according to the colours required, mingled in an almost liquid paste; the whole is then exposed to an intense heat, allowed to dry, and afterwards polished by friction. This is *cloisonné* enamel. The French is far finer than any Oriental work, although Oriental models have been adopted, as, for example, in two of Barbedienne's candlesticks, in imitation of storks, over which we might fancy some patient Indian artist bending. When we remember that this is a comparatively new industry in France, the results shown here are surprising. The arabesque designs exhibited in two noble tazze and a cabinet fit for Cinderella's boudoir, are exceedingly beautiful. But the Barbedienne firm is not the only one represented. There are others which bring charming specimens of *cloisonné*—as, for instance, two floral vases, a variety of cups and scent bottles, and some splendid salvers, contributed by the Messrs. Christofle. We quit them, however, to stop before the case belonging to the famous Philippe; and here human nature is really tempted. For anything more lovely than his two covered cups—worthy of Cellini in outline and purity—with a soft celadon ground, bearing a running wreath of flowers, and the chastest of scrolls below, could not easily be fancied. We commend these objects to the promoters of artistic and technical education, who are, just now, claiming so conspicuous a position before the public. Lingering yet between these luxuries and those at the upper end of the room, we have to admire an assortment of vessels in carved jade, mounted in gilt bronze, and a quantity of superb metal-work—urns, vases, statuary, candelabra, picture-frames, and mantel ornaments, all glowing in a kind of artificial light thrown from the glazed roof through a pale yellow velarium. The shawls and laces of the house of Verdé-Delisle are of wonderful pattern and texture; but even more attractive to many will be Rouvenant's jewels. Rouvenant's diamond feather, a spray of sparkling light, with a touch of the rainbow in it, will assuredly glitter on some proud young head at Court before long. In these cases, among the set cameos and the brilliants, we are less struck by the costliness of the gems than by the absolute perfection of the craftsmanship. The white porcelain of Lorraine, and the "mother-of-pearl" porcelain of Branchon are fascinating, too, as are also Brocard's enamels on glass, with Houry's clocks, Marnyhac's drawing-room bronzes and alabasters, Cornic's trifles in Algerine onyx, Dech's fancy chinaware, Parvillée's specimens of Oriental decoration, and the S. Clement collection of porcelain in "Stanislas blue," enamelled, and *repoussé* ironwork, in that which has been known, for upwards of a hundred years, as the "Lamour" style. Of course the Exhibition has its eccentricities—as Madame Rodolphe Olmade's (painter of wild animals) "speciality of games tables," whatever that may mean, and the marvellous "Fairy Water," and other beautifiers of Madame Felix. But, taken for all in all, this French display is of transcendent beauty—too showy, indeed, too fragile and picturesque, yet possessing, nevertheless, a transcendent charm. For the sun of industrial France continues to shine in the East, and is vivid with eastern beams. We are tempted to compare the treasures of the French Court with the Byzantine sumptuousness of Russia, the Murano mosaics from Italy, the pedantic porcelain and silver work of Prussia, the Gothic art of the ancient German cities, and the herculean sculpture of the Northern nations; but the limit has been reached, and not even the enticements of the Parisian studio may now detain us longer.

REVIEWS OF RECENT BUILDINGS.

I.—Venetian Gothic.

THE modern architect of any ability rarely seems happy until he has pitched on a style of his own. The chief exception, perhaps, may be found in the little group of talented men who have selected an almost identical phase of Continental Gothic as the vehicle for their ideas. But, looking away from them, everyone will remember names, each associated with some special variety of style: one who first imported into England the Gothic of Northern Italy; another who transplanted the earliest, and a third the latest, of French Mediæval developments; a fourth who has drawn largely on Moorish detail; a fifth who adheres to the Renaissance strictly so-called; a sixth who adores everything appertaining to Queen Anne and her time; and a seventh who, "faithful among the faithless only found," upholds in this misguided age the almost forgotten claims of pure Greek art. There ought, at least, to be one advantage in the system—we shall soon be able to judge, by actual observation, which, out of all styles the world has ever known, will suit us best. We are only waiting for some disciple of Mr. Fergusson to have his innings, and show how the details of a Hindoo temple may be usefully applied to a city warehouse, after which there will be few novelties of this class to expect. The ancient Mexican style, it is true, will remain, and when sufficient examples of it have been published, may, perhaps, be the means of introducing someone to public favour; but considerations of expense, it is to be feared, will operate against any revival of the megalithic or Druidical manner of building; while the snow architecture of the Esquimaux could only be relied on as permanent during such summers as the present one. It cannot, therefore, be long before all known styles are exhausted. We have been using them up at such an alarming rate that there cannot possibly be one a-piece for us much longer. Architects cannot for ever mark themselves out from each other in quite such an easy way as they have lately been adopting. Distinction will not always be gained merely by being different from everyone else; it will have to be acquired on the much harder principle of being better. We are far from denying, however, that useful hints may be derived from almost every style which has been followed by artists worthy of the name. To regret that their ideas should have been expressed in such a needless multiplicity of dialects is by no means to assert that those ideas are worthless; on the contrary, we should often be glad to translate them into a more familiar tongue. Venetian Gothic, for example, does not commend itself to us as the very best thing for modern London; but none the less do we think Mr. Somers Clarke's work worth the study of those who have started in a very different track.

The office of the General Credit and Discount Company, in Lothbury, is the first and largest building of the class now under consideration. Its general shape is of the very simplest. It is a plain oblong block, without breaks, projections, piers, or plinth; and it is with no intention of ridiculing what is in many respects a design of great merit that it may naturally be compared, in its general mass, to a long packing-case set up on one of its sides. It has, indeed, a hipped roof of low pitch, but the narrowness of the street prevents this from being seen except at a distance; and it has also several chimneys, of which more may be said presently. In other respects the packing-case adequately represents the general mass; and so far little commendation can be given. The architect has relied wholly on the detail; the main conception is bald and barren to the last degree. Venice, it is true, supplies examples of similar treatment; but then Venice is not London. What succeeds under a bright sky may fail under a cloudy one; what is admirable in marble may be unsatisfactory in stone; what is exquisite in delicately-tinted materials may be execrable with a ten years' coating of soot. The Northern builders of the middle ages knew what they were about when they relied on bold outlines and bold details. They remembered that storm with them was common and sunshine scarce, and they fitted their works to their climate. These smooth Italian buildings—whether Gothic or Classic—are only made for fair weather and fair usage. They are soon injured; a rainy day spoils them while it lasts; a smoky atmosphere spoils them altogether; and this, to a great extent, must always be a weak point in designs which begin and end with detail. In our City streets, it is true, there are grave reasons against irregularities of plan. Projections and recesses become the costliest of architectural decorations; but still the sky-line, at least, is left us. If houses must be square and straight below, nothing prevents them from breaking into a little picturesqueness at top; and it is worth noticing that some of the finest works extant, especially in towers, are designed on this very principle. We could wish, then, that Mr. Somers Clarke had aimed a little more in this case at that general beauty which outlasts disfigurements, which is independent of weather, and which, moreover, is effective, not only in a near, but in a distant view.

We proceed, however, to the details—the filling-in of the front and sides of this oblong block; and here there are some points to imitate as well as many to admire. The walls, as far as they are exposed to view, are entirely faced with ashlar, that in the basement stage being of red Mansfield. The windows here are plain square-headed openings, filled in with wrought iron stanchions of good design. Immediately over them is an elaborate string, or rather cornice, the principal members of which are a kind of projecting star ornament and a bold cable moulding. From this up to the topmost range of windows there are no other continuous strings, and the height is thus divided into three main stages. There is first the basement, rising some 5ft. or 6ft. above the ground; then the main bulk of the building, including the ground floor, the first, second, and third floors; and, finally, what corresponds to the entablature, and consists of the eaves-cornice and the fourth floor windows. The middle, or chief division of the height, however, is marked out from the rest in another way besides the omission of string courses. Its four tiers of windows are inclosed, after a Venetian fashion, in a sort of frame formed by a projecting billet moulding, or, rather, in several such frames, placed side by side. For example, in the front elevation, which is comparatively narrow, every floor has a range of four lights, divided from each other by piers or columns, and in the principal stage of the elevation there are consequently four such ranges one above the other. Just over the top one a horizontal course of billet moulding projects from the face of the wall; but, instead of being continued, as in English work, right across the façade, it returns vertically downwards close to the window-jambs on each side, till it stops on the star cornice a few feet above the ground. In the side elevation, next Tokenhouse-yard, which is much longer than the Lothbury one, there are several of such frames, if so we may call them, side by side; but here they are only wide enough to inclose two lights in a tier instead of four. To a certain extent, these inclosing mouldings serve to define the piers. They mark them out by perpendicular lines, and on a near view are not an inefficient substitute for the usual projections; but at a little distance we miss the contrasting light and shade of the Northern Gothic, and feel that in our dull climate this southern style of beauty cannot be half appreciated. There is not light enough to make a line of moulding a conspicuous feature; our smoky air and cloudy sky throw it into obscurity a few yards off, and in this, as in many other points, Venetian architecture is too delicate for English circumstances. The windows which are inclosed in these narrow borders are far better adapted to our wants. Their design is practical, bold, and striking. They have no thin and useless mullions; no complicated system of flat arches with pointed arches above them; none of the small prettinesses of such English Gothic, for instance, as that by Mr. Wilkinson, in Bishopsgate-street. Sashes are used throughout, as, in spite of Mr. Charles Reade, they are likely to be in most cases where people consult utility and convenience; but the sashes do not in the least spoil the design. The vertical lines are strong enough to keep them in subordination; the reveals are deep enough to throw them into shadow; it is not a case of thin upright bars of stone contending against thin horizontal bars of wood as to which shall have the apparent supremacy. In the Lothbury front, we have said, the windows are arranged in a line of four. Those on the ground floor are long and narrow, and are divided from each other by square pilasters having moulded bases, and caps carved with the Venetian acanthus. They have flat heads, but these do not rest immediately on the pilaster capitals. The latter, on the contrary, are placed some two feet below them, and a cable moulding, worked on the edge of the lintel, returns downwards for this distance to stop on the abacus. The first-floor windows are of another pattern. Instead of pilasters, they are divided by three-quarter columns attached to deep square piers, and instead of flat lintels, they are surmounted by a double range of pointed arches. Each light is first covered, as in an ordinary arcade, by an arch of its own, while, higher up, other arches spring from the points of the lower ones and carry a horizontal stone extending over the whole range of lights. All these arches are trefoiled, not with shallow cusps after the English manner, but with deep and massive ones like those in the Ducal Palace; and all of them, as well as the intervening spandrels, being pierced and glazed, the result is a substantial and effective description of tracery window. How widely it differs from what is commonly known by that name may be inferred from the fact that the tracery, and the columns on which it rests, carry, without any relieving arch, the whole thickness of a wall three stories high. The second and third floor front windows nearly resemble each other. Both have square heads, unmoulded, resting on three-quarter columns attached to piers, or at the jambs, on narrow pilasters. Between these two tiers of windows, which are bound together by a special frame-moulding of their own inside the principal one, is a frieze of figure sculpture in high relief. It is too far from the eye, and somewhat too small in scale, to be very clearly seen, and one can only perceive enough of it to be sorry that it is not more accessible. The architect and the sculptor are often apt to come into opposition, and though in this case the former may perhaps have felt that his design required the ornament to be placed where it is, the latter would not improbably have preferred a station a little further from the sky. If the position could not be altered, the scale of the figures might have been increased with advantage; and here, too, as in many other cases, public ignorance might have been wisely enlightened by an inscription. A few words to explain, or even remotely to suggest, the subject of a bas-relief, would add immensely in these times to the popular interest in it. We are not ancient Greeks nor Mediæval Catholics; few of us have either Christian or Pagan symbolism at our finger's ends; we are too busy to stand for hours guessing at an artist's meaning, and what we fail to comprehend we soon cease to remember. If sculpture is ever to be a living thing again, it must begin by being understood; but alas! in many of its modern applications, it suggests no more to most people's minds than so much diaper or arabesque work.

The side windows, as before noted, are arranged in pairs. Those on the basement and ground floor resemble the front ones. On the first floor, however, they have plain pointed arches, inclosed by a single semicircular dripstone, with a slight ogee, and a large foliated finial. In place of the frieze, too, between the third and fourth stories, the side elevation has sexfoiled circles filled in with figure subjects, apparently good enough to make it a pity that they are so imperfectly distinguishable. The topmost windows, both in the sides and the front, are intimately connected with the eaves-cornice. They have shafts of red serpentine, on which rest heavy moulded brackets, supporting what corresponds to the corona in a Classic composition. This also forms the head of the windows, and is worked on its edge into something like a dentil course. The member which constitutes or carries the eaves-gutter projects still further, and is carved with the usual billet moulding. There is, in fact, rather more than enough of this particular moulding throughout the design. Fond of it as the Venetians were, and effective as it really is, it is quite possible to have too much of a good thing. If, even in Mr. Somers Clarke's hands, such a detail becomes rather wearisome, it is painful to think what might happen in the event of this style becoming popular. The same tendency to redundance of ornament comes out in one or two other features. The balcony, for instance, under the first floor front windows, is pierced by a number of eight-foiled circles, whose sawlike cuspings recall those of our latest Perpendicular. The trefoiled arcades, which are repeated below the window-sills in several places, might well have been spared, and in spite of much general delicacy and refinement, something of over-sweetness is manifest throughout the work. It is far from being coarse and vulgarly obtrusive, like the pseudo-Gothic of the day; but still a little reserve and severity would have made it more lastingly attractive. The true artist should send us away, not satiated with ornament, but rather desiring more of it.

There still remain two points to be described—the entrance doorway and the chimneys. The former has already been illustrated in the Building News. Its arch, a semicircular one of three orders, has an ogee dripstone of the inevitable billet moulding, surmounted by an elaborate finial. The innermost and outermost orders of the arch are square, and adorned on both faces by scroll work or acanthus leaves in low relief. The intermediate member is a round one, worked into an effective twisted roll or cable. A flat lintel runs across the opening of the door, and the tympanum is pierced for a fanlight, protected by a wrought-iron grill of good design. The arch rests on three small shafts in each jamb, with caps and bases, which themselves rest on a lower tier of similar shafts; the one tier rising from the ground to the level of the flat lintel, and the other going on from this to the springing of the arch. The arrangement is more singular than beautiful, and by breaking the height into two stages makes the doorway look lower than it really is. The chimneys are the least pleasing portion of the whole design. They stand over the side walls at the different pier spaces, and as the roof is a low one they show out very prominently against the sky. It is difficult to describe them, and impossible to point out, in London, any other chimneys to which they can be compared. They consist, however, of flat, and somewhat thin, blocks of masonry placed on end, and capped by an overhanging cornice. Their sides are straight; but their ends, on the contrary, slope outwards obliquely, like long weatherings. To these ends are attached semicircular projections, like half columns, which come down on the weatherings just described, and profile their whole length on them from top to bottom. Without a sketch it is impossible to give a true idea of these singular pieces of ugliness; but whoever has seen a cemetery mason's "design for a monument in the Egyptian style" can form some notion of their remarkable and very unprepossessing expression. Mr. Ruskin, if we remember rightly, calls the Venetian chimneys very ugly; yet few Venetian ones with which we are acquainted are quite so unfortunate in appearance as these.

Taking the design as a whole, it succeeds where our Gothic town architecture usually fails, and fails where this succeeds. The treatment of its windows is artistic and rational; and here it is much in advance of most English work of its class. Its style, generally, is civilized—not wild, savage, and archaic—and in this point also it is in harmony with its surroundings. But it goes rather too far in this direction. It tends to be over-smooth, unnecessarily regular, unnaturally sweet; and a dash of Northern spirit would give to it precisely the charm that is lacking. A little picturesqueness of sky line, a little more light and shade to diversify its mass, would have brought it nearer, as we think, to the true ideal of modern street architecture than almost any design that could be named. We propose to notice hereafter two or three other works of similar character to the present one.

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WATER COLOURS AT THE ROYAL ACADEMY.—II.

Mr. MAC-CULLUM shows great power of effect, apparently easily produced, in his "Warwick Castle" (No. 626), from the river. In this effect he seems greatly assisted by the material upon which he paints, to an extent scarcely legitimate. Still, there is no question that the drawing does well represent the castle in a mist. This is, however, a picture of a class which might, we should think, tempt an artist away from real work to the production of slight, but pleasing unfinished pictures. As a study of a particular effect, rapidly produced, it is valuable, but a frequent repetition of similar scenes would be of little value. As far as the present drawing is concerned, it is very attractive and clever, but we hope it is not to be one of a perpetually recurring series. There are several rich bits of effect, which after all is a very legitimate use to make of this rapid medium. Happy is the man who can, before his colour dries, catch and record the ever changing hues of sunlight, or the glorious hues of autumn, or even the increasing gloom of the late evening. Foremost in this way is R. Redgrave's "Homeward." You can feel the darkness coming on, a feeling which also is admirably expressed by the wayfarers and their little ones hastening to get home before they are benighted. Another gorgeous example of the effect of colour, without the details being much elaborated, is W. O. Burton's rich autumn sunglow "At Whitley, Surrey." "H. C." need not have been afraid to append his own name to the capital little free sketch of "Leith Harbour." If less mannered in handling and colour, E. G. Dalziel's scenes of country life would be of a very high quality. As it is, there is a feeling of disappointment in looking at them; we feel that they could be made so much more true and pleasing but for the peculiar treatment of the artist, who seems to delight to leave so much to the imagination, though apparently finishing rather highly. We have a novelty this year in what is called a ghost scene, "The Haunted Park," by R. Doyle. Here we have transferred to canvas, and to some extent carried out, some of his excellent delineations of the salient manners and customs of the English. He shows here that he can catch the life of earlier times as cleverly as he has done so often those of our own. The time chosen for illustration is that of the early Georges. The park of a fine old manor-house is again peopled with the shepherds and shepherdesses, the fine gentlemen and ladies of the patch and hoop period. In one corner we have a minuet being danced with more than usual sprightliness, mixed with dignity, the life of the resuscitated party being evidently a gentleman gravely comic, who is fascinating his partner by his elaborate steps, aided by the effect of his coat tails, which he is holding out at arms length. Here the coy maiden is escaping from her pursuer, the pet lamb frolicking after her. There sit two lovers in true Chelsea china fashion, with a lamb or pet dog lying at their feet, with a blue ribbon round its neck. One of the most whimsical delineations in the picture is the pinch of snuff in the foreground. Two beaux of the first order, two ghosts of patches on their cheeks, complete the perfectness of the representation. This is one step in advance of the main outlines that Mr. Doyle has hitherto favoured and amused us with, and it gives us hope that he may still proceed further, and give us more than sketches of life and character. That he could do so is evident from the present drawing. H. P. Rivière gives a pleasing sight of country life in the land of the sun and the grape. A handsome peasant woman is walking along a narrow country path twisting her yarn as she goes, and carrying her pretty cheerful baby in a basket on her head. The little fellow, as bright as the sunny landscape, is amusing himself with his mother's rosary. On looking at it one is reminded of those industrious Pæonian women that so took the fancy of Xerxes that, with usual barbarian insolence, he ordered their entire transportation to Persia. Mr. W. E. Frost's sketches are all full of character, and excellently coloured. "The Faun's Frolic" (No. 727), is the most interesting. There is no mistake about the tipsy jollity of the whole party. The whole picture blushes with the ruddy wine which is being spilt in all directions. Mr. T. Pritchard's "Glacier de Goerner," (No. 634), is a remarkable drawing, and apparently gives a true, though somewhat hard description of a marvellous view of nature, in one of its less known phases. The prismatic colours of the icefield are very striking, but one would have expected either less colour or more transparency. Mr. N. E. Green's views in the North are capitally drawn, but over-coloured; the very usual defect of want of wetness in the water strikes one particularly. There are several beautiful examples of flowers and fruit. Mr. J. J. Hardwick is very successful in "The Blue Iris and Wallflower" (No. 666), and "Group of Chrysanthemums," but perhaps the very best thing in this kind of painting is Mr. M. Collinson's "Heather" (No. 687)—a modest title, which would hardly have led one to expect so beautiful a drawing; it is, in fact, a delightful group of wild flowers, the heather predominating. The furze and ferns are equally good; there is also a charming peep of the bright sunlit sea, harmonising with the pure colours of the flowers. Almost equal, as far as the fruit is concerned, to W. Hunt's delineation of the glories of the garden, is Mr. J. Sherrin's "Fruit" (No. 720). The gooseberries, plums, and ivy are wonderfully faithful to nature, but the rest of the picture is not so successful. It is a question, when in subjects requiring such extraordinary finish as fruit and flowers, whether the background may not better be subordinated, so as to concentrate the attention upon the more important object. This was certainly the usual habit of W. Hunt, who has scarcely been surpassed hitherto in such subjects. There are several other fair specimens of fruit and flower painting, but none nearly equal to these.

Careful delineation of what the artist has seen, though of subjects not particularly interesting, is always praiseworthy, as the power gained by strict observation and painstaking conscientiousness will not fail the painter when he has an attractive subject as well. Among the most respectable examples, and deserving favourable notice in this category, are Mr. W. F. Stocks "Old Houses in Kenilworth" (No. 683), which are commonplace dilapidated affairs, but, notwithstanding, the drawing is well worth dwelling on, as the limner has given us exactly what he saw there. The effect of the old worn out thatch, with its thick dirty moss, is admirably given. The old truck is not so well drawn. Another instance, almost reminding one of De Hooge for rapidity of execution and brightness, is Mr. H. King's "Highland Interior." The keeping of this drawing is excellent, as a faithful representation of geological scenery. Mr. G. Child's "View from the top of Castle Rock, Lynmouth, North Devon" (No. 713), is worth noticing; he has very happily caught the character of that rock-bound coast. Of course in this exhibition nothing in water colour comes near the extraordinary examples which occur among the oil paintings, especially the marvellously-true "Chill Autumn" of Mr. Millais, which, as far as it goes, is simply perfect; and Mr. Brett's astonishingly true and accurate view of "The Effect of Sun and Cloud on the Bright Mediterranean Blue" (No. 522); and his "Etna" (No. 545) from the heights of Taormina. We only instance these as what can be done by careful, accurate, and rapid observation—gifts which this artist possesses more than most of his contemporaries. No one who has seen his beautiful drawings of the corona of the sun during the last eclipse can question his unusual power of observation and faculty of transferring his visions to paper or canvas. But to return to the subject immediately before us; Mr. H. R. Robertson gives a pleasant waterside story of child life (No. 773), "The Wreck Ashore," which might have had a better place, as few of the figure drawings are of as good a quality. An old punt has been fished out of the water and run ashore on the Thames bank, and a jolly young waterman and his sister are, each in their own line, shamming hard work, the young fellow with a punt pole, and the girl with an oar, much to the interest of a favourite dog; the youngest of the three is sitting as a passenger making a daisy chain. The whole is well conceived, and very fairly carried out; the river and its adjuncts are very faithfully portrayed. H. Bright's conspicuous picture of "The Battle of the Frogs and Mice" seems to us to be a great deal of pains ill-bestowed. There are two clever bits of rapidly-executed effects of the power of light and reflection which we must not omit. One Mr. W. Field's "A Grey Day on the Thames at Oxford," is very grey certainly, rather too grey, but still a most accurate and pleasing representation of the bright reflection of the smooth river. The other we refer to is an evening sun-down effect (No. 689). "On the Adan, Sussex," by Mr. R. H. Nibbs. This is an instance of a very rapid and free brush. In conclusion, we will just notice some of the most praiseworthy of the water-colour portraits. There are several very good—more that are meretricious and unsatisfactory. There is scarcely anything more life-like and artistic than the late Mr. T. Goodall's two drawings (Nos. 808, and 810), "Masters Saxon and John Noble." They are just what such portraits should be. All the power of the artist is concentrated on the portraits themselves; the dress, &c., though quite true, is subordinate and slight. The amount of labour, and successful labour, upon the faces is immense; one is reminded of the elaborate drawings of Vandyke. Near them, and in strong contrast in manner of handling, is an accurate life-like portrait of "W. Clagburn, Esq.," and "J. J. Colman's Children," by Mr. Sandys. There is no denying the force and truth of these drawings, but we doubt the necessity for the exaggerated outline, which produces an unpleasant and unnatural stiffness; still, we feel sure that, as in the case of the original pre-Raphaelites, this new school of portraiture will exercise a beneficial effect upon the art, though we have little doubt that much of the mannerism will disappear. These remarks appear in a still greater degree to No. 637, "Lady Ogilvy," by Mr. E. Clifford. One can see at once that the portrait is a perfect likeness, but it is certainly marred by its unnatural hardness of outline and general stiffness, though when compared with some of the meretricious things of the careless sensational style, such as No. 801, it is quite a relief. We close this notice with the hope that, as the great art of water-colour painting is certainly better represented this year than heretofore, it may each year really show itself at the Academy, as it is in truth, a worthy competitor with the more taking, but not more valuable art of oil painting.

ARCHITECTURAL BOOKS.

Salvete aureoli mei libelli,
Meæ deliciæ, mei lepores!

BOOKS to the architect are invaluable. They are his main mental pabulum. And as nothing can come of nothing, only as the mind is filled can we take from it. "But how," some may say, "can a man be original if his ideas are got from books?" In the words of our most original painter, Sir Joshua Reynolds, is the objection answered: "Invention," he says, "is nothing more than a new combination of ideas from time to time stored up in the mind." This is as certainly true of architecture as of the sister art of painting. Moreover, too, the power of knowledge is not only in the accumulated store, but in its stimulated effects. So he whose knowledge is greatest should, and will be, unless there is some other deterring cause, the most able and original designer. No man of genius will depreciate the value of books, though of course it may be that a man has books but no genius. These thoughts have naturally arisen just after a pleasant looking over of the case of architectural books of Messrs. Morel & Co., at the International Exhibition. Their works were not by any means strange to us, but are ever new, always examined with renewed delight. These beautiful productions constantly suggest the inquiry, "How is it that we in this country have done so little and our neighbours so much?" With us little or nothing has been done in the way of architectural publications of late years, certainly nothing of note, whilst in France the graver and printing press have been amazingly active, and the number and beauty of the works issued is most surprising. As regards importance of subject, excellence of word and line engraving, clearness of type, &c., they surpass anything published here or elsewhere. To the Parisian firm of Morel et Cie., the world is indebted for most of the finest specimens of these magnificent works *of* art, as well as *on* art. Some were published with Government aid, the late ruler, as it must be acknowledged, being a staunch promoter of the arts. The Morel's book-stand is in the centre of the southern arm of the French annex, and there the books can be at all times examined.

Many architects in London are no doubt familiar with these works, but as many probably are not, it is worth while to say something of them. But first, a hint to our country friends. In consequence of the difficulty and expense in obtaining foreign works, some London architects a few years ago formed a "Foreign Architectural Book Society," in order to obtain and study choice foreign, and, for the most part, very costly books. The books are first circulated amongst the members, who meet monthly to chat over the same at each other's houses, and at the end of each year are sold amongst the members to the highest bidder. In this way the publications of France (notably of Morel) and Germany have been made known, and with considerable advantage, not only to the members, but to many beyond the limits of the society. Might not in many other places a "Foreign Architectural Book Society" also be useful and entertaining?

Now to the examination of the Messrs. Morels' bookcase. First and foremost in interest to the Gothic architect will probably be the celebrated "Dictionnaire Raisonné de l'Architecture Française du XI. au XVI. Siècle," by M. Viollet-le-Duc—a work deserving of all praise. It has been the labour of years and a work of love. The type, the exquisite delicacy of the wood engravings, so different from the wood-cuts or rather wood *choppings*, we are accustomed to see, their great number, and the fund of information amassed, constitute this work as unique. A gospel of art, a very miracle of beauty! Though its usefulness to many an English architect may not be so great as it would be if in our own tongue, yet the language of art all can understand, and the *four thousand* illustrations speak intelligibly to every one. It, assuredly, is a work which every architect should possess. The ancients had a high opinion of the advantage of studying *one* book thoroughly, rather than many cursorily; hence their proverb, "Cave ab homine unius libri." And, certainly, if in our art and profession any one work will compensate for the loss of all others, sufficiently equip a man, and make him, in knowledge, a dangerous adversary, it is this under consideration. An example, we think, of a man made by a book is Inigo Jones, as we suspect he was by Palladio's "Libri d'Architettura."

The young student whose means will not permit of the purchase of the Dictionnaire will be benefited, at least, by the valuable *resumé* of its contents appearing in this journal. By the same author must be noticed the "Dictionnaire Raisonné du Mobilier Français," and the "Entretiens sur l'Architecture," the which are in the same style of excellence as *the* Dictionnaire, the *opus magnum* of the author, and of great interest and value. Other works on Gothic architecture of importance are "Architecture Civile et Domestique," by Verdier, in which are illustrated some remarkably early and beautiful houses at Cluny and elsewhere; "L'Architecture du V. au XVII. Siècle, et les Arts qui en dépendent," by Jules Gailhabaud, a magnificent production; "Histoire des Arts Industriels au Moyen Age, et à l'Epoque de la Renaissance," by Jules Labarte, a charming work, in which to insure accuracy, photo-lithography has been successfully used; "La Sainte Chapelle du Palais à Paris," by Decloux and Doury; this elegant building, which has had lately so narrow an escape from destruction, is here fully and beautifully illustrated; "Recueil de Sculptures Gothique," by Adams; "Les Ornements du Moyen Age," by Heidelhoff; Melange d'Archéologie," by Cohinard Martin; "Histoire de la Peinture sur Verre," "Monuments d'Architecture, de Sculpture, et de Peinture de l'Allemagne;" this last is a very important work, without which no architect's library can be considered complete.

The "Monuments de l'Architecture Chrétienne, depuis Constantin jusque Charlemagne," by Hubsch, and "Architecture Romaine," by Revoil, illustrating pre-Gothic churches, &c., are very worthy of notice, We should like to see some imitations of such buildings in rural districts after such a glut of meretricious Gothic as we have had of late years. In the examples of stained glass in some of the before-mentioned works, the student should notice the simple unaffected character of its treatment, no attempt being made to falsify its material qualities, whilst in that he sees in the exhibition, particularly the German glass, he finds obtrusive pretentiousness, and such forced lights and shadows as make it overpowering and blinding, to the utter annihilation of any other art in its neighbourhood. Our best artists, such as Clayton and Bell, unfortunately do not exhibit. In works on Renaissance architecture there is much to admire. The following are splendid productions: "Monographie du Palais de Fontainebleau," by Pfnor; "Monographie du Palais du Commerce de Lyon," and the companion volume of the "Hôtel de Ville de Lyon," by Desjardin; "Palais, Châteaux, Hôtels, et Maisons de France, du XV. au XVIII. Siècle;" the "Monographie du Château de Heidelberg," by Pfnor; and the "Architecture, Décoration, et Ameublement de l'Epoque de Louis XVI.," by the same artist. It seems in architectural fashion, as in dress, we must perforce take our cue from the French. Whilst the Gothic architect has of late been swearing by "Early French," the Classical architect has been equally enamoured of Late French, and a great deal of both has been copied into our recent buildings. The French, doubtless, do excel in their treatment of Classical architecture. It certainly is in their hands the style most perfectly adapted to modern wants and refinement. We cannot, therefore, do better than follow their lead; and to this end many of the Morels' books are very valuable aids. In addition to the foregoing authorities in Renaissance art must be named "Le Renaissance Monumentale," by Bertie; "Parallèle des Maisons de Paris," by Celliat; "Choix d'Edifices Publics;" the periodical "Gazette des Architectes," &c., &c.

In what may be termed engineering architecture is the "Monographie des Halles Centrales de Paris," by Baltard and Callet. In contrast with these buildings we become sensible of the deplorable wretchedness of our own markets. When our stupid optimism and miserable subservience to the tyrannous rule of a nobleman only anxious to guard his vested interests no longer defy common sense, and we set ourselves to build fitting markets, north, south, east, and west of this gigantic but steadily-growing City, these examples of French skill will be most valuable; the sooner the better. Other works there are of more strict engineering character, and others of general mechanics, concerning which I do not venture to express an opinion. In sculpture, are some very interesting books, as "Les Frises du Parthenon," photo-lithographed; "Œuvres de John Flaxman," in outline, "Œuvre de Jean Goujon," and "Sculpture, Bas-Reliefs, et Statues," by Lacour. These should be in the possession of every sculptor and man of taste.

For decorative artists may be recommended "Motifs de Décorations," in which, and the "Journal Manuel de Peintures," valuable suggestions in colour will be found, many of the examples being very good; Recueil de Déssines pour l'Art et l'Industrie," "Decorations Intérieures et Meubles," and in "L'Art pour Tous," "L'Ornementation au XIX. Siècle," the "Ornements des 4 Ecoles," and the "Exemples de Decoration," &c., &c., not less useful guides for form. The marble mason will find in the "Monuments Funéraires," by Normand, materials for varying somewhat his ugly stock-shop designs for our cemetery decorations. In "Inventions Décoratives" by Solan, and "L'Orfévrerie Française," silversmiths and other metal workers will find hints of value to them.

Architectural students, who are now very properly seeking to obtain a knowledge of figure drawing, will find the "Cours Elémentaire et Grades du Dessin de la Figure Humaine" of great use.

Only one other work have we time to note—"Monuments Modernes de la Perse," by Coste, a handsome and interesting book, evidencing that architectural skill still exists in the East. The library of the Institute of British Architects, by the munificent gift of the late president, Sir William Tite (the only president who has performed such an act of grace), has become possessed of most of the works named, and it is much to be desired that the junior institute, the Architectural Association, was equally well off. The Association has always felt the want of a library of its own, and is now endeavouring to supply the need, but progress is slow, necessarily from the costliness of the books and the lowness of the funds. There is not one of Morel's books but what ought to be in the library; they would be of immense value and immensely valued. Will not some rich and liberal member of the profession supply the needed aid? Though he has done so much elsewhere, or rather because he has done so much, we imagine there is more hope from the respected and liberal knight of Bath and of *the* Bath, than from any other quarter. All honour to him! "He that deviseth liberal things, by liberal things shall he stand." P. E. M.

THE REPARATION OF S. ALBAN'S ABBEY.

On Thursday week a very important meeting was held at Willis's Rooms for the purpose of promoting the movement for the thorough "reparation" of the truly venerable structure of S. Alban's Abbey. The chair was occupied by the Earl of Verulam, and in addition to those who took part in the proceedings there were also present the Earl of Essex, the Earl of Clarendon, Bishop Claughton (Archdeacon of London), Mr. Abel Smith, M.P., Mr. Brand, M.P., Mr. Dimsdale, M.P., Mr. D. Dalrymple, M.P., Sir Charles L. Young, Mr. Longman (High Sheriff of Herts), Archdeacon Grant, and a very large number of ladies and gentlemen. Letters of apology were also received from Mr. Beresford Hope, M.P., and other persons.

The **Chairman**, in opening the proceedings, said that some months ago those in the immediate neighbourhood of S. Alban's were startled by the report that the great Norman Tower was threatening to fall. Upon examination the statement was found to be too true. The rector, the Rev. W. J. Lawrance, instantly took the matter up and sent for Mr. Gilbert Scott, at whose suggestion precautions were adopted to prevent the dreaded catastrophe from occurring. With the assistance of twenty gentlemen who each sent the rev. gentleman £50, measures had been taken which had, he hoped, saved the tower for the present. Kirkstall, Jervaulx, Fountains, and Glastonbury had all fallen, and the question was, were we to allow S. Alban's to share their fate? (Cheers.)

The **Marquis of Salisbury** moved the following resolution: "That this meeting learns with deep regret that a building so venerable and of such historic interest as S. Alban's Abbey is in so precarious a condition." The noble marquis pointed out that S. Alban's stood almost alone amongst buildings of its size in having no sustentation fund. Its ecclesiastical position was merely that of a parish church in a very poor town. This church, besides its architectural splendour, was a monument of one of the greatest events that ever took place in the history of England—it was a monument of the first martyrdom within our shores for the Christian faith. (Cheers.) After centuries in which martyrdom had been only a name to us, we had lived to see it once more become a fact. We had come to see Christian men called upon to brave hardship, persecution, and even sudden death for their religion; and we could realise a little from what we had seen passing before our eyes, the trials which had to be undergone by those who had first suffered for the faith in this land; and to whose constancy and endurance we owed it that we were Christians at all. Surely it was a matter of some value to the nation that we should have before our eyes that which might recall to our recollection the trials and the virtues of those who had suffered for the name of Christ. He believed that a nation which should neglect such memorials would really show itself insensible to the high claims to our reverence which those memorials really possessed; and that such negligence must react upon its own moral existence. He was certain that if we allowed the feelings and tendencies of a somewhat material age to obliterate the sentiments which a great monument of this kind was calculated to call up, we should suffer more acutely than any loss of mere material wealth could represent. Those, therefore, who lived in the neighbourhood had a right to call on the country at large to prevent the scandal, and the injury which the destruction of this great memorial of the past would not fail to inflict upon the present generation.

The **Dean of Westminster**.—I will endeavour, however imperfectly, to second the resolution which you have heard so well proposed by the noble marquis; but I can only address you upon the general interest which is felt in S. Alban's by all Englishmen. I have, however, I may say, some personal interest in the matter. In former times, it might have been thought too much to expect the chief of the Chapter of Westminster to appear as an advocate for anything concerning the welfare of S. Alban's, for throughout the whole of the middle ages there was a constant feud between the two Abbots as to who had precedence as peer of Parliament. For a very short time the Abbot of Westminster gained his cause, but for the most part he was obliged to yield precedence to the chief of that great Abbey whose cause we are pleading on this occasion. For my own part, I must confess, however, to that fellow feeling which must exist between Westminster and S. Alban's from the very nature of things. Just in the same way as we feel that Westminster must have thrilled to its very inmost stone during the time when its sister Abbey of S. Denys was in danger during the first siege of Paris, and during the still more imminent danger to which the sister Cathedral of Notre Dame was exposed in the second siege; so must every stone of Westminster, if stones can feel, shudder at the forlorn and desolate condition of S. Alban's. Perhaps the best way in which I can occupy your time will be to leave others to enlarge both upon the peculiar needs of the place and upon the peculiar architectural beauties of this magnificent structure; and confine myself to those circumstances in its history which give it a unique position amongst the great churches of England. No doubt the question may be asked, "What reason has this great parish of S. Alban's to appeal to the munificence of the nation more than any other ecclesiastical structure?" Some of those reasons have been given you by our noble chairman, but I venture to think that if I very briefly describe what may be called the inner soul and life of S. Alban's, of which its splendid architecture is the outward husk and shell, I shall do something towards showing that S. Alban's has a peculiar and special claim upon the sympathy of educated Englishmen. There are, I venture to think, four things which in a more or less degree are peculiar to the history of S. Alban's. The first has already been touched upon by Lord Salisbury—namely, its connection with the death of the citizen of the Roman Verulam, whom we commonly call S. Alban. This day, I may observe, is the anniversary of his martyrdom—though I am sorry to say that by a very stupid blunder his day now appears in the Calendar of our Church on the 17th of June instead of the 22nd. You have heard, in terms which I should only spoil by repeating, the importance to ourselves of the martyrdom of the first Englishman. What I would therefore urge is, that the Church of S. Alban's is actually a monument and witness, I might almost say, of the truth of the event. If you know S. Alban's, you will have observed that the peculiarity of its situation is this—it stands upon a hill on the other side of the small stream which separates it from the remains of the ancient city of Verulam. The modern town of S. Alban's has, in fact, drawn from its ancient site to the hill on which, according to the oldest tradition, S. Alban died. This is exactly in accordance with what we always find to be the case, when there is some sacred or memorable spot—and especially when some sacred or memorable tomb—in the neighbourhood of an old town. In such cases, we almost invariably find the population attracted from their accustomed dwellings to the spot which is thus hallowed. I will illustrate this by two instances drawn from the most different states of society and civilisation. One is in Palestine; and it struck me so much the last time I was there that I have before spoken of its likeness to S. Alban's. I refer to the tombs of the patriarchs at Hebron. The old city of Hebron has been entirely dislocated, drawn from its primitive position and rebuilt around the Tomb of Abraham, just as the old Roman city of Verulam has been dislocated and drawn around the Christian tomb of S. Alban. In the same way, as the name of S. Alban has entirely superseded and driven out the old Roman name of Verulam, so has the name of Abraham, the Friend of God, entirely driven out of the mouths of the people of the country and extirpated the old Canaanitish name of Hebron. I will now take a case totally different, and it occurs in our own country. During the persecution of the Covenanters, one of them was executed outside a parish, I believe somewhere in Dumfries-shire, and the whole population of that parish have migrated from their ancestral dwellings and congregated around the foot of the gallows; so that the present parish has been gathered round the place of execution, just as the population of old Verulam has gathered round the modern church of S. Alban's. I regard, then, the very site of the church as proof of the history, though I do not profess to defend all its details. I am obliged, for instance, to surrender Amphibalus altogether—probably he was but another name for the cloak or chasuble which figures in the story—but the fact of S. Alban's death and martyrdom on the hill on which his church stands I hold to be indisputable. The second great event which is connected with S. Alban's is of a totally different character, and it is not equally credible, though still interesting. You are aware that one of our greatest ecclesiastical monuments with which I had once the honour to be connected—I mean the Cathedral of Canterbury—owes very much of its present splendour to its having been the scene of a great murder—the murder of Thomas A'Becket. In like manner the present structure of S. Alban's originated in a great crime. The story of the murder of Prince Ethelbert of East Anglia, by King Offa of Mercia, at the instigation of Queen Drede, who was the Lady Macbeth of those times, is one of great tragic interest. Whether it was worth commemorating by a great abbey, especially one of the extent of S. Alban's, is another matter; but I wish to point out that through this event there are two English counties which have a special right to take part in this work. One is East Anglia and the other Herefordshire; for Hereford Cathedral owes much to the tomb of Ethelbert, and Norwich is still connected with his name by the great Ethelbert Tower. If there be any citizen of Hereford or of Norwich here, I call upon them by the memory of Prince Ethelbert to assist us. Indeed, we might appeal to the whole continent of Europe, for of all the Princes of the Heptarchy the only one whose name is connected with the Continent is that of King Offa. How it was I cannot imagine, but Offa was in the habit of receiving friendly letters from Charlemagne, and we need not doubt that that Emperor took the greatest interest in the original foundation of S. Alban's. Whether on that account any application might be made to the new Emperor of Germany it is not for me to say. The third ground why S. Alban's may appeal to the sympathies of educated Englishmen is the singular tragical interest it possesses in having been within a few years the scene of two of the most sanguinary battles which occurred during the War of the Roses. On both occasions the conflict raged round and round the abbey; and as both have been described by one of the glories of Hertfordshire, Lord Lytton, I am sure that any Hertfordshire man, and indeed any Englishman, must on that account take an interest in S. Alban's. The fourth ground of my appeal is one that I may especially direct to the noble earl near me (Lord Stanhope), and to all students of the history of England. S. Alban's, for whatever reason, was the special, peculiar, and singular patron of English historical learning in the middle ages. I am ashamed when I look at the chronicles of my own minster, to see how meagre and poor is the figure which they cut by the side of those of S. Alban's. Our one annalist is Matthew of Westminster, whose very name, I am sorry to say, is made up from that of the most interesting writer of his day, Matthew Paris. On the other hand, S. Alban's can boast of having no fewer than four distinguished men, Roger of Wendover, Matthew Paris, Rishanger, and Walsingham, who have written a complete history of the great events that had happened in England down to their own times. I maintain that that fact alone ought to commend this great church to the attention of every one who cares anything for what brings before the mind that which regards the past. Not only so; but the example which S. Alban's set in this matter fired the nobles around it with a zeal for learning which I don't believe can be found in an equal degree in any other neighbourhood. Humphrey, Duke of Gloucester, whose tomb still exists at S. Alban's—encouraged, I cannot doubt, by the noble example set by the abbey—was induced to found the first great public library in England—the beginning of the University Library of Oxford, that afterwards grew into that great Bodleian, to which every Oxford man and every English student owes so much. Both in the case of Humphrey and of Matthew Paris, deep interest in learning was combined with as much critical discernment and endeavour to separate truth from falsehood as was compatible with those early times. In the case of Humphrey, every one knows from a well-known scene in Shakespeare how he endeavoured to distinguish between true and false miracles. In the case of Matthew Paris, though he gave a ready ear to all that was told him,—though it was he who first heard from an Armenian Bishop that wonderful story of the Wandering Jew which has become the groundwork of so many romances,—though it was he who heard the story of King John's willingness to become a Moslem for the sake of winning the daughter of the Sultan,—though it was he who, at the request of Henry III., described a great solemnity for some relic at Westminster,—though he listened with a ready credulity to whatever was told him, there is in his Chronicle a real attempt at critical discrimination, and a most remarkable candour of spirit. I know not whether it was owing to that kind of *genius loci* which imperceptibly influences our greatest men, but I cannot forget that the author of the *Novum Organon* and the *De Augmentis Scientiarum*, whose real name was, not Lord Bacon, as we so often call him, but Viscount S. Alban's, lived close by, and though he is not buried in the abbey, his monument is in the neighbouring church of S. Michael Nicholas, and will always be an object of attraction to pilgrims from every part of the world who visit the ancient city that bears his name. These, then, are the four historical grounds on which I venture to think that S. Alban's has a unique claim on the support of every educated Englishman. I will only quote from the great man to whom I just referred, when I say that this great church is one of those "remnants which have casually escaped from the shipwreck of time;" and we of this age shall be doubly and trebly guilty if we neglect the duty of preserving and restoring them. This nineteenth century is, I believe, the very first age of the world which by a long course of civilisation has had clearly impressed upon its mind, and in a manner in which no other generation of mankind ever had impressed upon it, the peculiar value of these ancient monuments, the peculiar duty of preserving them to future ages, and the peculiar insight into their merit, which has been fostered by the new development of Gothic architecture and Gothic taste that has arisen within our own lifetime. We have far more light on this subject than any other generation of our countrymen ever had before; and if we allow S. Alban's to fall, it will not be—as was the case with our ancestors—it will not be from mere insensibility, —it will be a positive sin against the accumulated light which has been given to us, and to us alone. (Loud cheers.)

Then followed other speeches, and the Bishop of Rochester dismissed the assembly with his blessing.

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ALTERATIONS IN THE POST OFFICE.

A FEW evenings ago Mr. Monsell stated in the House of Commons that he hoped to be able to introduce the new postal regulations on the 1st of August next; and already preparations of a most extensive character are being pushed forward at S. Martin's-le-Grand. Additional space will be required both in the Inland and Eastern Central Departments of the Chief Office; and this is being provided by throwing a second floor across a portion of what was formerly the central hall of the building. A year or two ago this hall, which, besides its architectural features, formed an important city thoroughfare, was shut up, the Corinthian pillars removed, and the work connected with the Registered Letter branch transferred to it. Overhead, there was erected subsequently a gallery, forming an addition to the Newspaper branch, necessitated by the introduction of the halfpenny postage; and now the space is to be further utilised by throwing a floor across between the Registered Letter and Newspaper branches. Simultaneously with this extension there has been provided a new staircase leading to the Secretarial and Telegraph departments; and by rearrangement of the offices of the Receiver and Accountant General, space has been found for the construction of a new public office. The new public office is being formed along the front of the building, to the right entering from S. Martin's-le-Grand, and will be seventy-five feet in length by about thirty feet in breadth. The construction of a public entrance to this new office involves a work of considerable difficulty, viz., the cutting of a doorway in the solid granite wall of the building, which at this point is some feet in thickness. Already, however, the work is more than half accomplished. The structural alterations within the General Post Office during the past five or six years have been of the most extensive and costly nature, and must have necessitated the expenditure of many thousands of pounds. They have been carried out in connection with some useful public reforms, as, for instance, the savings banks, the halfpenny postage, and the telegraphs, and perhaps this consideration may be accepted as a set-off against the total destruction—architecturally speaking—of an imposing public edifice. There is not much now left about S. Martin's-le-Grand to admire. A by no means imposing gable wall has been perched above the portico, and the "grand staircase"—said to be the finest thing of the sort in London—has entirely disappeared. Mr. Ayrton does not believe in "Grecian Temples" as public offices, and certainly he is having his way at S. Martin's-le-Grand.

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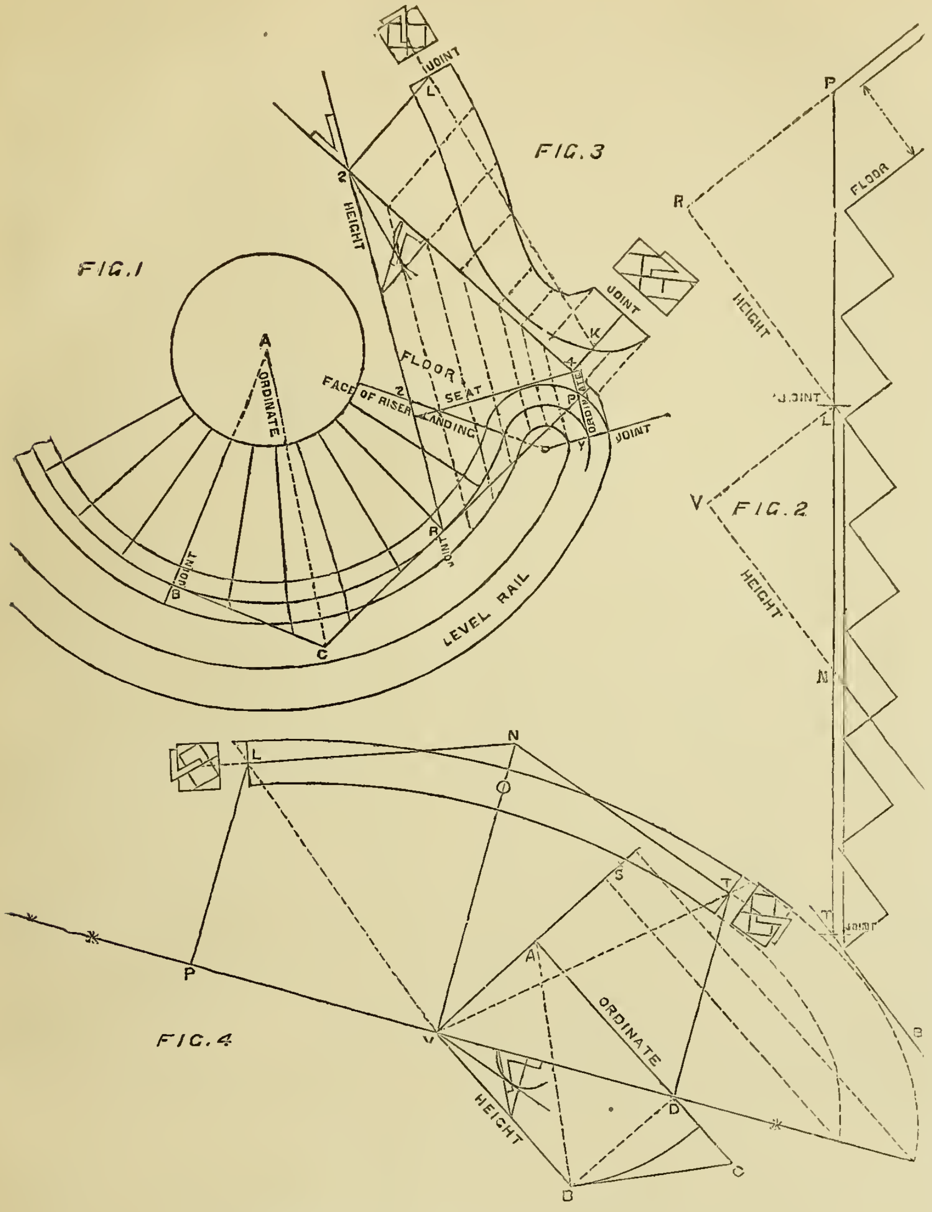
THE NEW S. THOMAS'S HOSPITAL.

THE *Athenæum* is evidently pretty much of the same opinion, with regard to the new hospital buildings at Stangate, as that expressed by the writer of the article on "Quaintness of Style," which appeared in the BUILDING NEWS for February 10 last, p. 104. Our contemporary says:—"It is hardly possible, even if it be quite fair, to write of S. Thomas's Hospital, now completed in Lambeth, as an architectural work. We have no reason to doubt the excellence of the system, involving as it does the construction of distinct blocks of buildings, connected at the ground floor only by covered ways, of which Greenwich Hospital affords something like an illustration. We think, however, that it is fair to consider this vast series of buildings as not devoid of pretensions to what is so oddly called 'an ornamental character,' a phrase the meaning of which our readers can understand more readily than we can explain it. Looking, then, at the new structure, as designed to be 'ornamental,' although not architectural, we regret that much money has been wasted, utterly thrown away, in 'enriching' a building which otherwise might have been like a collection of brick boxes with holes in them, dull and monotonous, but would have been free from vulgarity and unmarked by ill-supported pretence. Many of the features of this hospital are strange and ugly; the roof alone is curiously 'ornamental;' it might be improved by removing certain futile and ungraceful portions. The worst of the matter is that here is another of the many instances of noble sites ignorantly defaced by lack of intelligence in designing buildings for them. What might have been



NEW ELEMENTS OF HAND-RAILING.—PLATE XXXV.

done with even simpler means than are employed for this may be seen by those who care to look at a great brick storehouse, in the Italian style, erected a few years since close to the Shot Tower at Lambeth, and not a quarter of a mile lower down the river than this enormous hospital, the decorations of which serve to ruin the grand effect its size would seem to insure."

NEW ELEMENTS OF HAND-RAILING.*

(*Continued from page* 496.)

Plate 35.—Construction of Wreath, having a Double Curve to Land on a Level Gallery.

Figure 1 shows the plan of a stairs, having the rail to stand over wide end of winders, and connect with small circle at the landing.

Determine position of joints, say B and R. This makes one piece of wreath stand over five winders, and landing wreath to connect at joint R.

Draw tangents B C and C R extended. Unfold the tangents and winders cutting them, as shown at Fig. 2.

Let under side of rail rest on risers standing over B and R. Set off half its thickness. Now determine on height of rail over the winders, say 2—2, perpendicular with face of riser. That is, from top of step, to under side of rail. Then fix upon height of level rail on gallery; say 2—9, to under side. Set off seven inches above floor. Again, set off half thickness of rail. This having intersected the pitch at P, gives the height.

Let R P on left equal corresponding letters on right. Draw from P, touching centre of rail at Y. Or, lay a straight edge on O, and have Y P square with it.

Make the seat square with it.

Let 2—2, the height, equal that of L R on the right. Join 2.4. This is the pitch. Square over 2 and 4.

Let 2 L equal 2 R. Make 4 K equal 4 P. Join L K. This line, to be correct, must equal L P on the right. Now draw a few ordinates, and complete the mould, as shown.

Fig. 4 is the mould for piece of wreath standing over five winders. It connects with that just done.

This drawing is made to take up the least possible space. Nothing can be more compact or neat.

Commence by drawing the right angle A, B, C to equal corresponding letters on plan. Join A C, the ordinate. Make B D square with it. This is the seat. Draw from B square with B D. Let B V, the height, equal that of N V on the right. Join D V extended. This is the major axis. Let V P equal V D. Square over the lines. Make D T and P L equal A D. Let V N equal A C. Join L, N, T. These lines must equal the pitch on the right, having corresponding letters.

Next, find the length of elliptic curves, by drawing from V square with V B. Let V S equal A B. Set off on each side of S half width of rail. Draw parallel with ordinate, cutting the pitch. Now find points for pins, and strike the mould with a string.

The pitches being equal, one bevel answers for both joints, as shown.

Civil Engineering.

THE TIMBERING OF TRENCHES AND TUNNELS APPLICABLE TO RAILWAY AND SEWERAGE WORKS.*

Timber is required in constructing sewerage works to support the sides of the narrow and deep cuttings required in building the drainage culverts and pipe drains, for centreing, drainage purposes, and other special purposes hereafter mentioned. It is also required in tunnelling to support the sides of the shafts, and the roofs, and side walls of the headings; to carry the tramways, and for the construction of the long pump rods in the deep shafts. Also for centreing, drainage, trunks, and other special purposes. The manner of framing and introducing the timber depends greatly upon whether the timbering is to be only temporary, that is to say, merely to support the ground in advance of the masonry, or whether, as in the case of headings for a tunnel, it is required to stand possibly for several years.

Secondly, on the description and quality of the timber to be used; *i.e.*, whether the timber is to be round, half-round, or squared timber; and what sort of timber and what sizes of it are available. It is usual for temporary work, such as that first mentioned, to use the timber that is the cheapest, the most easily and most economically transported, and which is the most saleable after it has served the temporary purpose required of it. If the timber is sufficiently good and strong for its work no objection can be taken to such a course, but it is often a very short-sighted policy, as it is hoped to be shown presently. Before entering more particularly into a description of the timbering for open cuttings for sewerage works, and for driftways, headings, &c., for railway tunnels, it will be well to set forth a few simple rules for carrying out such works of timbering generally. They are well known by all mining engineers, and most of them by any good practical miner. (1) All timber used should be of as hard and tough a nature as it is possible to procure for a reasonable cost. (2) All timber should be cut at the fall of the year, when the sap is down, and no timber ought to be used that has not had a certain amount of seasoning, having been kept either constantly wet or dry for not less than six months after it was felled. (3) All timber used should have been barked three months before using. (4) The best description of timber for shores, sills, posts, &c., is larch or fir; oak may be used occasionally to resist a great transverse strain. (5) The principal strain should in all cases be thrown as far as possible upon the end of the grain of timber, or, in the case of waling pieces, sills or sleepers (which should always, if possible, be of half round timber) upon the rounded side of the timber. (6) All side pillars or side posts should be slightly oblique, forming with the head and ground sills the section of a truncated pyramid. The tenons of the pillars, &c., should be cut square, and the mortices in the sills at an angle to prevent lateral movement. (7) The timbers should be framed and fitted accurately; no spikes or bolts to be used to keep the timbers together; all wedging up to be avoided as far as possible, except in certain cases described hereafter. (8) All poling boards in headings, and the linings at the backs of the curbs where square shafts are timber-lined, should be pointed and driven obliquely, each set to overlap the preceding one. (9) All shores to be fitted to drive from above; and never in any case sideways or horizontally. When half round timber is used for the waling the ends of the shores to be slightly bird's-mouthed, to fit to the shape of the timber. (10) As large a bearing surface as possible to be allowed where the end of one timber takes a bearing upon the face of another timber. (11) When planks, battens, or other square timbers are used for waling pieces, they should be bedded in the sides of the excavation at a slight angle, so that when the shore, cut to the proper angle, is driven down from above it will always take a fair bearing over the whole of its surface. (12) Adjustable gauges to be provided for taking the exact length and exact angle of ends of the timber required. (13) No timbers require to be fitted in their places more tightly than to take a fair bearing. If any strain is thrown upon them they will be tightened far better and more in the direction required than by any artificial means that can possibly be used.

First, as to timber in open cuttings or for sewerage work. Most of these works are executed either in large towns or in the neighbourhood of them, and the timber used to support the sides of the excavations is either such as can be found in the place or can be most easily conveyed to it, fir scaffold poles, cut up into lengths, being used for the shores, and the cheapest description of battens or planks that can be procured for the walings. In many cases these are only used for form's sake, and might readily be dispensed with. The common practice is to introduce tiers of battens, about 4ft. or 5ft. apart in depth, with round poles of from 4in. to 6in. diameter for shores. These are almost always driven sideways into their places, and even if well cut and fitted have but a comparatively small bearing upon the batten which forms the walling piece. If the cutting is dry these shores frequently become loose and drop down, as there is seldom any upright or support under them. In many cases this arrangement proves sufficient, as no timbering is really wanted, but when there is really a pressure exerted against the timber the waling planks or battens are very apt to split, from the shores being driven in sideways, and therefore bearing on a very slight surface of the timber. If battens are used in the above manner it is much better to cut the excavation to a slight batter, and to let the battens or planks in parallel to the face, and to drive down the shores from above sufficiently tight to give the batten a firm bearing against the sides of the excavation. The lower tier of battens should be strutted up from the ground, and uprights should be placed at intervals between the tiers of battens, especially under the joints. When half-round timber can be procured it is generally preferable to the battens, as it has less tendency to split. In that case the flat side of the timber should be placed against the side of the cutting and slightly let into it, and the ends of the shores should be slightly bird's-mouthed out to fit the round side of the timber, and should be driven down from above. If the ground worked through is of very shifting nature, such as thin strata of sand, or clay, with water, it is often necessary to close-timber the cutting. In this case planks should be placed upright at intervals of from 5ft to 6ft., with horizontal planks behind them, one upon the other; the usual round shores being introduced between the planks, which must always be laid at a slight angle, so that by driving down the shores from above the whole will be wedged firmly into its position. When the ground is very insecure the upright planks can only be driven in short lengths, the one being made to overlap the other. Of course a system of timbering comparatively so complicated should not be used unless absolutely necessary, and in many cases where there is sufficient depth of roof it is better to carry on the excavation in short lengths and tunnel in between. But there are cases were tunnelling cannot be adopted, and it is better to go to any reasonable expense in timbering rather than to risk life. Besides the above reasons in many instances it is absolutely necessary to leave the timber in until the ground has become thoroughly consolidated. Unless such timbers are of the proper size, and have been well framed together, such a precaution is worse than useless, and it gives a fancied security which does not really exist.

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*This series of articles is a reproduction of Robert Riddell's work on the subject, published in Philadelphia, and by Trübner and Co., London.

* Paper read before the Society of Engineers by Mr. Charles Turner, of Southampton.

There is another use of timber, which cannot be said to be confined strictly to cutting trenches for sewerage work, as it is applicable in all cases where masonry is carried on in deep excavations. It has been found more advantageous instead of carrying down the mortar in hods to supply the bricklayers to construct small trunks 5½in. square internally, and about ¾in. thick; they are made out of stuff procured by putting two cuts through a batten and fitted with hopper heads. The lower ends are easily shifted, so as to deliver on to the mortar-boards, the trunk being slung by a rope attached to short shear legs across the cutting. The mortar heap is made close by the cutting as the work proceeds, and one man filling the mortar into the hopper heads of two trunks can keep four bricklayers going instead of two, or even at times three, hodmen, who would otherwise be required, temporary shores and struts being used in some cases until the permanent shores can be driven. Where the ground is of the nature of running sand, and can only be excavated in very shallow lifts or stages, the excavation may be carried on after the manner in which square shafts are sunk and timbered in some of the German brown coal mines, upright pieces of half-round timber, pointed at the ends, being first driven into the ground, in advance of the excavation, and inclining slightly inwards. Waling planks are fixed between these timbers and supported in a temporary manner by short piles, until the shores are introduced and driven from above, as before-mentioned, care being taken always to have uprights under the waling planks. A space varying in width from 2in. to 3in. will be left behind the waling planks, into which should be driven planks, or battens, or half-round pieces of timber pointed at the ends, and which pieces must be gradually driven downwards, as the work proceeds, as far as safety will allow, when another upright is driven down in front of the first in the same manner as already described, and shown in sinking short lifts through shifting ground, requiring to be close timbered. Great additional strength is given to this mode of timbering by introducing long binders of stronger timber from top to bottom of the excavation, taking a bearing against all the walings and having independent shores between them. This plan has also a great advantage in deep cuttings, where lias stone lime is used. The sliding of the mortar down the trunk keeps it chafed up soft instead of its constantly getting stiff upon the mortar boards when carried down in hods. It is of such great importance that the timbers used is shoring should be accurately fitted that simple adjustable gauges, which do not easily get out of order, will always pay for themselves, such as may be made for taking angles and splays, and also for taking dead lengths at the same time. Although there are great objections to using iron bolts, screws, or spikes to frame shoring together, there are cases where iron may be advantageously used in connection with wood, where shores have to be taken down, and replaced on the completion of each length of culvert. The ends quickly wear out, especially if they are driven horizontally, and the shores become too short. The plan was tried of shrinking iron hoops on to the ends of the shores, and was found to answer very well, and that there was a saving of one-third of the timber used in shores even in a length of 100 yards of culvert. Where the pressure is very great upon the shores they are very apt to split the waling, unless they are cut very accurately and are of the full size of the plank. It has been found of advantage to provide a few wrought iron clamps to use in such exceptional cases; they are fixed at the back of the shores. There is one more way in which iron may be used with advantage in connection with timber for shoring. It is frequently necessary to introduce additional shores at the bottom of a deep excavation for sewerage work, or to change the position of those which are fixed, to make room for the masonry. It is often very difficult to drive such additional shores into position, so that the proper pressure may be thrown upon them without disturbing several others. It is proposed to effect this object by making use of a double shore capable of adjustment in the length, and constructed in the following manner:—A piece of round timber 7in. diameter is hooped at both ends with strong wrought iron hoops made from ⅜ iron 4in. broad. A groove is then cut down the centre of the piece of timber 1in. wide, as far as the hoops at each end, with two cross grooves in the centre ½ by ¼. Folding wrought iron wedges, with projecting ribs to fit the cross grooves, are then introduced in the centre, and driven up till the timber is sprung apart about 2in. or more, as the case may be, according to the length of the shore. Two other rings made of the same sized iron are then slipped over the ends of the timber, sufficiently large to go nearly as far as the centre wedges. They are to be driven sufficiently tight to hold them firmly in their positions; the shore is then ready to fix in place. When in place the wedges are to be slackened, and the spring of the timber will cause the shore to fix itself tight without any hammering or wedging. When so fixed the loose rings are to be driven up against the wedges in order to prevent springing if an unusual strain is thrown upon the end of the shore. When the shore requires to be withdrawn, the wedges are to be driven up again, and in so doing the loose rings are driven back, and the shore being shortened is easily removed. Cast iron friction rollers working on wrought iron pins are sometimes introduced with advantage at intervals instead of the wood rounds to the ladders used for conveying materials in deep sewerage trenches; they should of course be rather larger than the rounds. By carrying an endless rope round these rollers bricks may sometimes with advantage be lowered down in boxes instead of being carried down in hods. There are many other minor uses for timber for sewerage work, such as centreing, put together in pieces when common centreing cannot be withdrawn, temporary drainage trunks, and other items, which need not be particularly described.

Secondly, as to the use of timber in tunnel headings. The timbering when the ground is tolerably firm generally consists of two side posts, which are let 4in. or 5in. into the bottom. They should be inclined towards each other and framed into a head sill. When the ground is soft or shifting the side posts should stand on sole plates of half-round timber or short pieces of plank about 1ft. 6in. long. If it is of a still more shifting nature it is better to frame the posts into ground sills, either let into the bottom or framed together in a complete system of longitudinal and cross sills. When two sets of frames have been introduced at distances of from 4ft. to 6ft. apart, as the case may be, they are lined at the back with boards or planks, either at intervals or close together as may be required. Pieces of board pointed at the end, commonly called staves, are then driven above the head sill in the direction of the next frame; these should always be driven with a certain divergence outward, in order to make room for the introduction of the following set. This divergence is obtained either by cutting the board wedge-shaped, or by driving in slight temporary keys from the front between the boards and the head sill; or, better still, by introducing a lintel above the head sill, which is wedged up by two or more hard wood wedges against the ends of the boards. It is sometimes necessary to drive these boards also at the back of the side posts and under the sills, forming a close timbering, having the section of the frustrum of a pyramid. It is often also advisable, in order to assist in obtaining this divergence, to fix a third set of framing rather larger than the others in front of the second set, over or outside of which the boards are driven. The second set of staves is driven forward, in like manner overlapping the others to the extent of 5in. to 6in. If the stratum contains much water it is necessary to secure the face as the work proceeds. It is better in that case to proceed in steps by fixing short planks against the face of the work, and driving shores between them and the next frame, and if necessary strutting the frame against the one behind it. The poling boards and the boards forming the lining behind the side posts are then driven forward by degrees, sometimes only a few inches in the course of a day. Various temporary means of strutting and shoring the face are adopted, but these are so numerous, according to circumstances, that it is impossible to give any general rules for constructing them. Experience and presence of mind are the principal guides to be relied on in such cases. Where it is necessary to carry a tramway through the heading the sleepers should be laid independently of the ground sills. The drainage from a heading should be carried in wood trunks laid upon the ground sills and under the cross sleepers carrying the tramways. These trunks should be made with a bottom and two sides tied together by cross pieces, dovetailed into the sides of all the joints and intermediate ties, about four feet apart. The top should be loose, formed of short pieces with ledges under, of such a length that they may drop easily into their places, and may be lifted for the purpose of cleaning out the trunk.

In enlarging the tunnel from the section of the heading to the full size, very little timbering is required in an ordinary way beyond the centreing, as the masonry in all cases should immediately follow the excavation as it proceeds. There is always, however, a certain space to support in advance of the centreing, to allow room for the men to work in. This will often carry itself; at other times it is supported by short ends of boards, or planks resting on the masonry, and either shored or strutted against the face. A better plan would be to make use of an inner and outer centreing, the outer slightly overlapping the inner, and being strutted up from it. The front face of the inner or principal centreing should stand almost fair with the face of the outer centreing, but must not overlap it much, in order to give room for filling in round the outside of the arch. The two sets of centreing should be moved forward gradually as the work proceeds, and wedged up when in their places. The uprights should be of round timber; all tightening up should be done with wedges driven between the double plates. In some cases it is very desirable to construct the centreing so that it may be taken to pieces. A trussed centreing in three thicknesses is the most convenient description of centreing for this purpose. The outside segments of the centreing are cut in the usual form, and are jointed on the uprights; the uprights are shouldered to support the middle piece. The uprights and segments are tied together by wrought iron hoops, which are riveted to the one segment, and, passing through a mortice in the middle segment and the outside segment on the other side, or the opposite upright, are keyed firmly against the upright or opposite segment by a hard wood wedge driven through the loop.

Then as to timber in shafts: in some cases a double curb of three inch plank, with the cross joints properly broken, is laid upon the ground, and the masonry being built upon it, it is gradually sunk into the ground, by excavating out the inside, and under the curb, various descriptions of iron bond being used to tie the masonry. For smaller shafts a common well curb is used, rather more strongly constructed than usual. Where timber is plentiful, and the conveyance of materials difficult and expensive, a square or rectangular shaft may be sunk and timbered in a similar manner to the shafts adapted for the mines in the Hartz Mountains. A strong curb of round timber is first laid, the timbers being halved together and slightly bird's-mouthed, in order that they may fit to the rounded sides. When the ground is very full of water or otherwise insecure the curbs are laid one upon the other. At other times they are kept at variable distances apart, and are sometimes lined at the back with two-inch planks, but generally they are lined at the back with boards pointed at the ends, driven to a certain batter by the same means reversed as those described for driving headings, one set of boards always overlapping the next.

The long pump rods for deep shafts are generally of square timber, scarfed and bolted together, but where tapering sticks of round timber are readily available they will make an equally strong and much lighter and more economical pump rod. There are many other purposes for which timber is used in connection with tunnelling, as, for instance, the windlasses and horse whims for raising the stuff excavated, the ribbles or tubs in which it is raised, and the various timber erections and other buildings which are required in connection with the pumping and hoisting apparatus. These, however, vary so much that it would not be possible to describe them properly within the limits of an essay. It is sufficient to say that all framing should be well and strongly put together, and well tied with iron where it is in the open air, and all wearing parts should be of iron, or if that is not possible, of very hard wood; and nothing should be so complicated as to prevent an intelligent miner from taking it apart and putting it together again. It is not for a moment supposed that anything new has been brought forward in the foregoing observations. An attempt has only been made to collect together a few memoranda from personal experience as a railway and sewerage engineer and contractor, and also the results of the information obtained while superintending some mines and furnaces in the Hartz Mountains, the timbering of which was carried out under the direction of a very intelligent and experienced German mining captain. Several of the modes of using timber above described were there executed under his superintendence at the suggestion of the author of this paper.

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UNIVERSITY OF WALES.

ONE of our lithographic illustrations this week represents perspectively Mr. Seddon's design for the proposed University of Wales, Aberystwyth. The building was intended, in the first place, for a magnificent hotel, but the proprietor, Mr. Savin, having collapsed in the general crash of 1866, it was left in a half-built state. It was subsequently sold to the committee instituted to establish a Welsh University. But the Welsh are proverbially slow in their movements, and when the structure will be finished we cannot say. There is scarcely a county in England but would have made efforts to finish it long since, and so terminate the agony of architect, builders, and all concerned. We gave an elevation of the building in the BUILDING NEWS for December 28, 1866, and a view of the principal staircase, April 14, 1871, No. 849.

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ROLLING AND SWING BRIDGES.

IT not unfrequently occurs that it is required to erect a bridge across a river, or estuary, where the conditions of the locality render it necessary that a portion of the bridge should admit of being opened, or temporarily removed, in order that shipping may pass it, and the construction of such a bridge calls for the most careful consideration, both in the designing and execution of the work; hence we propose to offer a few remarks on the principles of these structures, such remarks being chiefly of a practical character.

There are several ways in which a bridge may be opened: thus the roadway may be withdrawn, or rolled backward towards the land, or it may be caused to revolve upon a centre, thus altering its position from being at right angles to the direction of the stream for one parallel to the same, or it may be caused to rise vertically about a centre fixed upon the pier. Of these three classes of bridges, the first is termed a rolling bridge, the second a swing bridge, and the third a bascule bridge; and the question to be determined is, which description of structure is best suited for the work set out for it.

The desiderata in opening bridges are, durability of parts, rapidity in opening and closing the bridge, and minimum of force required to effect the same. The importance of the first point is rendered more distinct by comparing an opening bridge with one which is permanent in its position. In the former case it is usually absolutely necessary that the bridge should, during certain periods in the day, be open, to allow the continuance of traffic on the river or estuary which it spans; hence if the working gear be out of order, so that the structure cannot be readily opened and closed, it must be kept open until it is again in a position to work with ease; therefore, while undergoing repairs, it is useless as a bridge, if those repairs are being made upon the moving gear. Rapidity in opening and closing the structure is very necessary, in order to reduce the loss of time due to the stoppage of traffic to a minimum, for it must constantly occur that either the land traffic is stopped to accommodate that on the water, or *vice versa.*

The third requirement refers to the amount of force requisite to put and maintain the bridge in motion while opening and closing, and, as a matter of course, the less power required, the simpler will the machinery be; the cost of working and wear and tear being proportionately small, hence the liability to derangement of the working parts is also small.

We will now proceed, says the *Artizan*, to consider *seriatim* the different descriptions of opening bridges, to which we have above referred, commencing with the rolling bridge.

The rolling span of an opening bridge is so arranged that, when requisite, it can be wheeled or rolled back in a line parallel to the direction of the length of the bridge, so as to pass over or under another portion of the structure, or on to the land, thus leaving the space clear which it occupied when resting on its piers, and doing duty as a bridge. In such cases, the structure will usually be made to move upon four or more rollers, two of which are fixed to the shore end of the rolling girder, and, like ordinary carriage wheels, travel upon rails, while the others are supported in fixed frames or pedestals, the girders of the bridge resting upon them and passing over them while rolling backward and forward. To this description of structure there are many very grave objections, objections which theory will fail to discover, although after they are rendered conspicuous by practical experience, the defects giving rise to them may be accounted for by reasoning on the conditions under which these masses of matter are required to be put into motion. In the first place, it will be observed that there is a very great load on each roller, especially when we find only four rollers to sustain the entire weight of the bridge. Assume, for instance, such a work to weigh about 100 tons, which would correspond for a railway bridge to about a 70ft. span, then there will be 25 tons weight on each roller carrying the bridge, and from the form of the bridge and its mode of motion, its progress is necessarily unsteady from its own vibration, which is increased by any inequalities of the surface upon which it runs, and also by starting or jerking of the propelling machinery.

As we have above stated, a part of the bridge must be allowed to rest on rollers in fixed pedestals, hence the lower surfaces of the bottom flanges of the girders are those upon which the rollers revolve, and any unevenness in such surfaces must very materially add to the amount of force required to keep the structure in motion, and if the flange be curved it will of necessity involve the addition of extra force, either when opening or shutting, to propel it up the incline, produced by its own curvature. Moreover, a brief consideration will show us that such a curvature in the girders of a bridge cannot possibly be avoided, for if we make the bridge with a dead plane surface to its bottom flanges, it will deflect with its own weight; and even if we allow, for the sake of argument, that the bridge could be made with such a "camber" that its own weight will exactly bring it down to a straight line when on its bearings, then again whilst in the act of rolling its deflection would vary, for the distances of the points of support must vary, the rollers supporting the ends of the girders being fixed to and travelling with it, whilst the others retain their positions in relation to the fixed piers, so that when the rolling span is first started from its fixed bearings it has a long overhang, and there is a short distance or length of span between the fixed and travelling rollers; then as the bridge progresses in opening, this length of span increases, accompanied by the decrease of overhang, and a corresponding change occurs in the form of the girder. A similar but obverse change of form occurs in closing the bridge. This, then, shows that there is a cause which cannot be obviated, always giving rise to excessive resistance to motion on the part of rolling bridges, which, we may observe, is much aggravated by the changes produced in a bridge by the vibratory effects of passing loads, and more especially of railway trains. The extent to which these disturbing causes affect rolling bridges may appear somewhat astonishing to those who have not been much acquainted with them in a practical sense, but when we observe serious mistakes in calculations connected with such matters, we look closely for the causes, and they often lie nearer the surface than might have been anticipated. To bring the matter more clearly forward, we will have recourse to figures obtained from actual trials. The first point to be determined is the amount of tractive force required to move the bridge; here it might seem that railway practice should furnish us with the requisite data; but, to be on the safe side, we will allow a tractive force of 20 lbs. per ton of load; then for this we have, taking the rolling span of the bridge as weighing 100 tons, 100 × 20 = 2,000 lbs., or say roughly, 1 ton. This would be moderate enough, but we find in practice it sometimes requires three or four times as much, and in one instance there was actually six times the calculated tractive force applied to a rolling bridge before it would move, and then it went but slowly and spasmodically, notwithstanding that the bridge was well constructed and carefully erected. The excess of force requisite to propel the bridge was, of course, absorbed in overcoming those obstacles to motion to which we have referred above.

Under these circumstances it would seem that where they can be avoided it is exceedingly unwise to construct a rolling bridge, there being so many objections to it; but, of course, where the only available room lies in the line of the bridge, there is no option, and this class of work must be had recourse to.

The next bridge to which we shall refer is that on the "bascule" principle, being that which opens upward, as it were, like a box lid on hinges. This kind of structure answers passably well for small light spans, but when large, is objectionable on account of the power required to raise the weight, and also on account of the resistance of the wind to any opposite movement of a large surface against it.

The last arrangement to which we desire to call attention is that which has given the greatest satisfaction in practice, viz., the swing bridge, which opens by turning sideways, moving from its normal position across the stream to one parallel, or nearly so, to its direction. In this arrangement the bridge revolves upon a turn-table similar in construction to those used on railways, and is, of course, properly balanced, so that its weight may be duly distributed on the working parts of the turn-table.

By adopting the swing bridge, to avoid those great resistances to movement which are so fatal to practical utility of the rolling bridge, there is no tractive force required to produce actual removal of any portion of the structure, in the strict sense of the term; for the centre of gravity of the opening span, or swing portion of the bridge, remains unmoved. It is located, if properly balanced, in the centre of the turn-table when the bridge is closed, and it occupies the same position when it is opened; there has, consequently, been no actual transference of weight from one site to another, and the only resistance which has to be overcome is that due to the friction of the rollers in the turn-table, and the centre upon which the bridge rests; and that this may be reduced to a minimum is evident, from the fact that at the present time there are many turn-tables in actual use, which, when loaded with 60 tons, in addition to their own weight, are easily caused to revolve by one man acting at a distance of 25ft. from the centre. Thus it is evident, that by improving the turn-tables of swing bridges, we may fairly anticipate getting a structure as perfect as is practically possible to employ where it is necessary that a bridge should open and shut; and in this direction we should strongly advise those contemplating the erection of such works to turn their thoughts, as the rolling bridge has in every case in which it has been used proved a comparative failure, whereas swing bridges have generally served their purpose well, and the superiority of the latter evidently does not rest upon perfection of workmanship, but is due to accuracy of principle.

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THE ART MONUMENTS OF FRANCE.—If the several political parties of France were able to carry out their iconoclastic principles, a wholesale destruction of the art monuments of the country would, the *Debats* thinks, take place. The Communists destroyed the Vendome Column, and now the Ultramontists propose in their organ, *Le Monde*, to pull down the statue of Voltaire and throw it into the sewers.

THE LONDON INSTITUTION.—The managers of the London Institution, Finsbury-circus, in accordance with the recommendation of the annual meeting of proprietors, have resolved to afford opportunities during the ensuing season for the reading and discussion of communications on subjects of special interest in science, literature, commerce, and the arts, provided they receive such offers as will ensure an adequate succession of suitable papers. It is believed that this proposed extension of the use of the commodious lecture-theatre of the Institution will produce a series of attractive meetings similar in character to those of the Society of Arts, but representing directly the business and thought of the City. It is not intended to restrict the reading and discussion of papers to the proprietors of the Institution, or to limit the range of subjects, otherwise than by the provisions of the Royal charter, which simply preclude theology and politics.

CHURCH OF OYESTREHAM, WEST FRONT.

THE LIMMER ASPHALTE.

AT the last meeting of the City Commissioners of Sewers, the engineer (Mr. W. Haywood) reported that the Limmer Asphalte Company had applied to him for a certificate on account of the pavement in Lombard-street, and under their contract they were entitled to it provided the work was done to his satisfaction. The work was done with apparent care, and its surface, when opened, presented a smooth condition to which no objection could be raised; but on the 24th and 25th May last, the weather being hot, the surface at various places became so soft that the wheels of vehicles and the shoes of horses left their marks plainly visible at numerous places upon it; in some places ruts some feet in length and a quarter of an inch in depth were visible to the eye, and could also be left by the foot. This was specially the case on the first of the two days mentioned; on the next day the traffic passing over the same spots, although it increased the number of marks, reduced the depth of the ruts which had been formed on the previous day. An asphalte pavement liable to soften in this manner would be difficult to maintain with a smooth surface; thus one of the advantages of asphalte would be lost. It did not seem to him likely to be a durable pavement, and although, the company being bound to maintain the roadway for seventeen years, no expense could fall upon the Commission, whatever its durability might be, yet if it needed frequent repair, or was otherwise often out of condition, it was of course not a satisfactory pavement, and under the circumstances, he begged the favour of the Commission determining whether he was to give the certificate or not. He added that he never thought liquid asphaltes would be satisfactory. He must ask the Court to take upon itself the responsibility of giving the certificate.—In the discussion which followed Mr. Hora said he thought they had better suspend giving the certificate.—Mr. Bedford remarked that the Streets Committee thoroughly agreed with Mr. Haywood. — The Engineer said that his impression was that they were bound to give the certificate, because he believed that the work was done with care. On the morning after the work was finished, the Limmer Company were entitled to the certificate, and he would then have given it unhesitatingly.—After some further conversation the matter was deferred.

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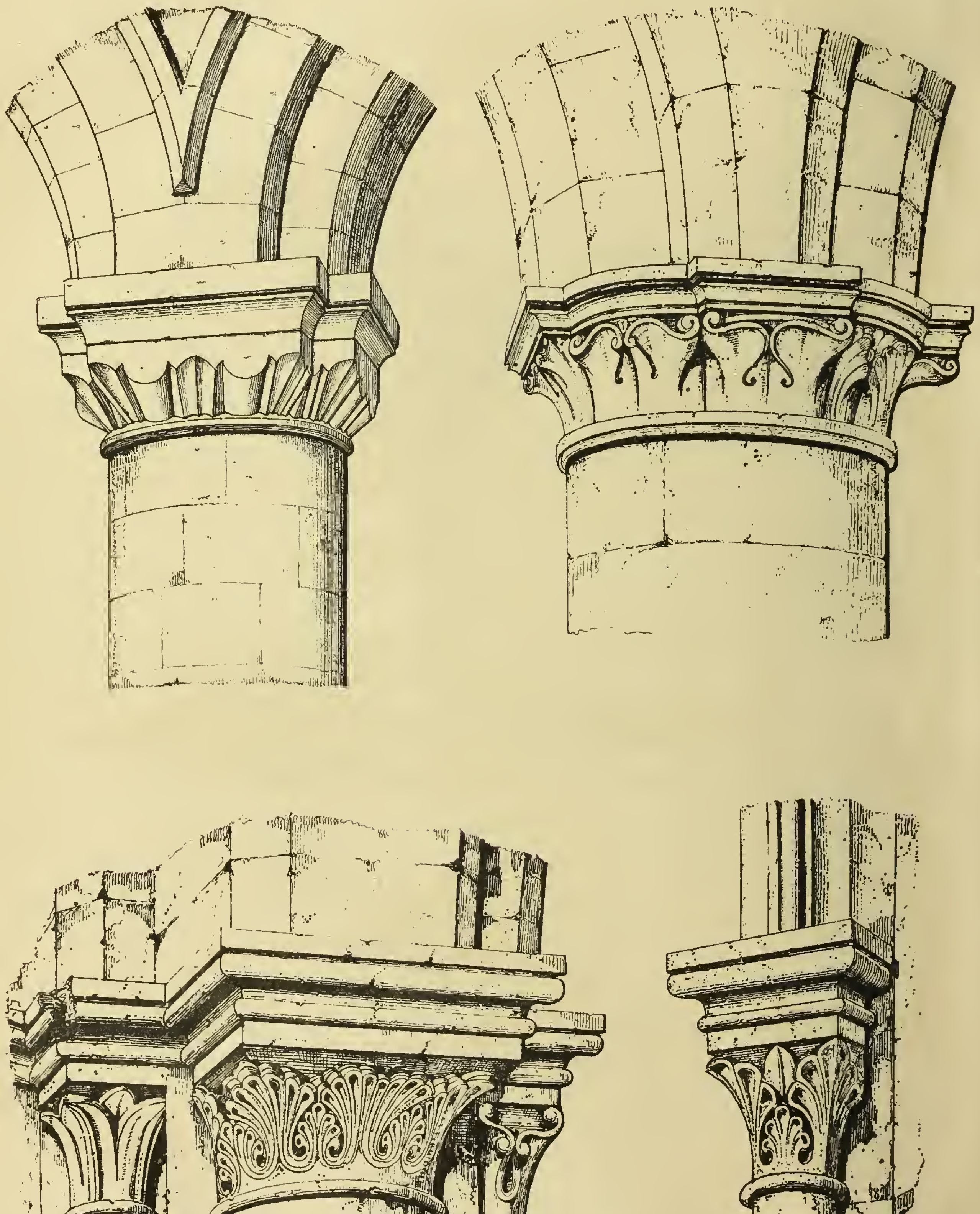

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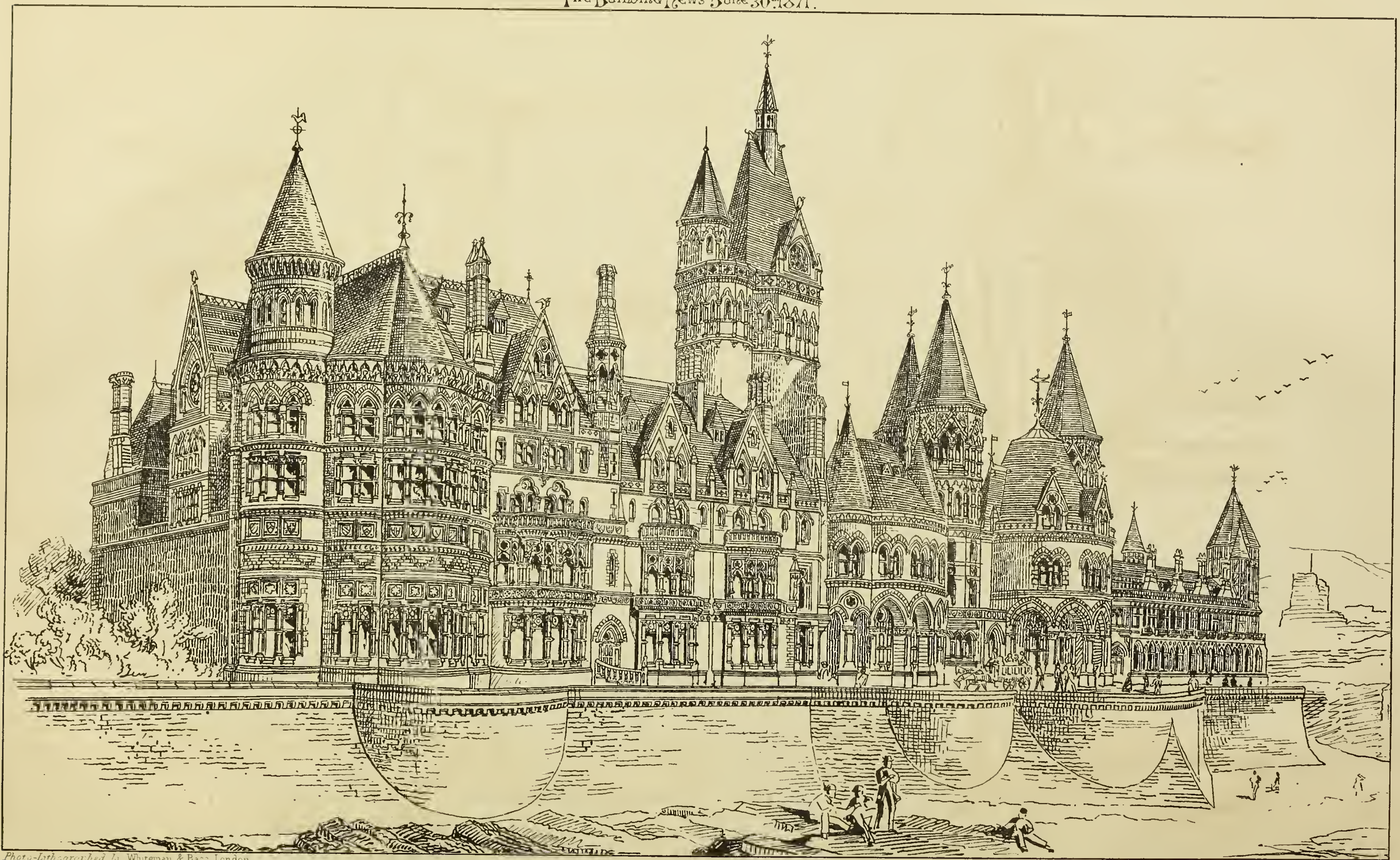
ORNAMENTATION OF THE TRANSITIONAL PERIOD.



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UNIVERSITY OF WALES, ABERYSTWYTH.

J. P. SEDDON, ARCHT

ORNAMENTATION OF THE TRANSITIONAL PERIOD.

MR. EDMUND SHARPE'S labours in illustrating the various periods of English Gothic architecture have been so long known and honoured by all of us, that the appearance of the first number of a new serial work by Edmund Sharpe, M.A., made me, I confess, not a little sceptical as to the identity of its author. The first work which led me seriously to contemplate the study of Gothic art was the "Architectural Parallels." I began, like most boys of my time, with the Five Orders, close attention to modules, cyma-rectas, and a host of names and rules that I am thankful to have forgotten. In an evil hour the title of "Parallels" caught the eye of my Classic master, and the book was ordered. I need hardly say how eagerly I escaped from the hard, formal, un-English, unadaptable views which had been thrust upon me, to the freedom, the variety, and the fullness set forth in the admirable drawings and careful measurements of "The Parallels." Since that time Mr. Sharpe has given us various small works, more or less tending to the illustration of his pet idea, put forth twenty years ago—the division of English architecture into seven periods.

One of these periods, 1145-1190, now generally known as Transitional, is the period selected by Mr. Sharpe as the subject of the volume the first part of which has just been issued. In his introduction, our author very properly says that it is not "difficult to trace, in the direction which popular taste in modern buildings has recently taken, the influence which this early school of British art and the contemporaneous architecture of continental Europe have exercised on the designs of English architects of the present day." That this influence is a healthy one cannot be doubted, for in the best examples of this period we find none of those littlenesses which too often accompany the best work of later styles. The lininess or reediness of the complete Early English, as we see it at Salisbury, is absent in the earlier work at S. Davids, Abbey Dore, and Roche Abbey, although the thin end of the wedge is evident in the sacrifice of the simple column to the compound or clustered shaft. This important transition is clearly exhibited in Mr. Sharpe's work.

In aisled and vaulted buildings it is manifest that the main piers have a threefold work to do: (1) to carry the wall arches or longitudinal ribs; (2) to support the central vault; and (3) to receive the side or aisle vault, which may be called the transverse ribs. Now so long as the conditions were equal, or nearly so, as in crypts, vestibules, &c., there was no difficulty in receiving these four ribs or half arches on the single capital of a single and simple column. Directly these simple conditions were elaborated, *i. e.*, directly the transverse ribs became lighter, and the longitudinal ribs or arches were multiplied and placed one under another, the fall of the single shaft was doomed, and with it the capital of the square abacus. However logical and artistic this may be as a matter of detail, I cannot avoid the conclusion that it was destructive to the general artistic effect of our large church interiors, for let any one stand at the west end of a nave with plain circular shafts: about the middle and beyond the middle shaft impinges upon shaft, and the high light on the nearer shaft is relieved by the shaded side of the next shaft beyond, and so on in exquisite gradation—a gradation, too, which the application of good coloured decoration only tends to enhance. Take a similar view of an interior with clustered shafts, and what happens? Whereas in the case of the single shafts it was not possible to see them other than in beautiful gradation, we now see light impinging on light from at least one half of our points of observation. I would advise the student, therefore, not to accept the solution of the twelfth century, which is unquestionably worthy of much praise, as a final and conclusive settlement of the question. They did not altogether accept the clustered shaft principle even in the middle ages. Many architects and builders struggled against it, and in the hope of finding a better solution than has yet been discovered, I would counsel a further struggle and a harder fight. To this end we should do well to study such examples as are to be found at Buildwas, Sutton, Wimborne, Kirton, Laughton, Abbey Dore, and New Shoreham—all illustrated in the first part of the work before me. At Kirton and Laughton we see most markedly the struggle to retain the square abaci and single shaft, and yet to escape the awkwardness which inevitably results when an arch with more than one order or soffit rests on a single square abacus.

Of the "ornamentation" of the second half of the twelfth century there will be, no doubt, much to be learned from this work when it is completed. The first part is naturally devoted to the most elementary forms, and did we not look forward hopefully to the coming parts we might be tempted to fancy that the "cushion" form of capital, characteristic as it is, has had more than its due share of attention. From S. Davids and S. Mary's Abbey Dore we have the best specimens of ornament. At Chichester and Lincoln, instead of the mason's good enrichment, we have the crude carving of a sculptor breaking through the conditions of the material, and suggesting the bending, and twisting, and beating out of metal rather than the cutting of stone. One very marked feature in many of these Early capitals, is the emphasis given by strong deep mouldings to the abacus, as at Abbey Dore and New Shoreham. The inner porch of S. Mary-at-Redcliffe, Bristol, contains also very marked examples of the highly-developed abacus, and I very much question whether any building possesses more refined and thoughtful Transitional work than that exhibited in this small porch. The only measured illustrations I know of these last-mentioned examples are to be found in a work on the "Architectural Antiquities of Bristol," which, conjointly with my friends, Mr. Burder and Mr. J. Hine, I published some twenty years ago. There are few things of which architects now-a-days are so neglectful as the abacus. This and the section of the base moulding may almost be taken as tests of the strength of the designer. Nor is this modern weakness altogether without precedent. At Kirton it is in one case so weak as to suggest, what in all probability was the fact, that the carver was left to do what he liked with the mouldings. Even at S. David's there are instances of a tendency to weakness in this, as it appears to me, all-important member.

The illustrations (almost entirely limited to capitals and the springing of the arch members) are bold and effective, in some cases too bold, and in most decidedly too effective. Positive black shadows may be all very well for large illustrations on the walls of a lecture-room, but they look blotchy and coarse in the pages of a book. The woodcuts on page 14 have a far better effect than any of the photo-lithographs, from the very absence of black shadows; and plates VIII. and XII. commend themselves to my eyes for the sole reason that they contain less black relief than the others. There are points of perspective, too, which might have been attended to with advantage, as, for example, the abaci in plates I. and VI.—trifles, perhaps, in a young man's first efforts, but, coming from the author of "Architectural Parallels," fraught with danger to those who are fond of quoting precedents and examples.

EDWARD W. GODWIN.

ALBERTIA.—No. 1.

TWO months have elapsed since Her Majesty, with right regal pomp and circumstance, inaugurated "the Royal Albert Hall of Arts and Sciences," a structure which was to be, as it were, the crowning feature of an edifice devoted to the delectation and regeneration of mankind, the securing and promotion of the arts of peace, and the harmonious association, in common purpose, of all the intellectual and ennobling energies of mankind. This magnificent scheme, to which Royalty gave its peculiar care, in which fashion fraternised with labour, and to the promotion of which the State lent its aid in the form of a money grant, and the zealous co-operation of its high officials, both civil and military, has now seen the best part of its first season, the programme of which has become nearly exhausted. It will, therefore, perhaps not be considered premature if we now take a survey of what has been accomplished in this much-boasted undertaking, and what is yet to be expected of it; to ascertain, in short, how far the high purpose upon which the combined influence of royalty, fashion, wealth, and science, were so brought to bear, is likely to be realised. There is, besides, the further question with which the public are most concerned,—namely, how far such a combination of high influences in support of an institution aspiring to monopolise the direction of all that concerns the promotion and the interests of the art, science, and industry of the country, is likely to act beneficially, or the reverse.

The first inspiration of the whole of this business—for matter of "business" it has been with its most active promoters all along—originated in the Commissioners of the Exhibition of 1851 finding themselves, most unexpectedly, in the possession of a surplus of about £180,000. The most ambitious views now opened up to them; the Commission of 1851 was not to end with the completion of its work; 1851 was to be the commencement of a new era of a new institution. The Albert Hall Committee, in their statement of July, 1865, thus explain the matter:—

> Shortly after the closing of the Great Exhibition of 1851, numerous representations were made to the Commissioners of that Exhibition, on the part of Chambers of Commerce, learned societies, and other bodies of persons interested in science or the arts, of the want that was felt in England, and especially in the chief commercial cities, of a central institution in London for the promotion of scientific and artistic knowledge as applicable to productive industry.
>
> The Commissioners were deeply impressed with the representation so made, and announced, in their second report to the Crown, that they had devoted the surplus funds of the Great Exhibition to the purchase of an estate at South Kensington, with a view of providing a common centre of union for the various departments of science and art connected with industrial education.

It is not stated here, though in candour it ought to have been, that the Commissioners did not purchase this estate entirely with their own funds—the State providing a nearly equal sum, and purchasing the property jointly with the Commissioners, as a partnership concern. How the Commissioners contrived, by dealing with part of the lands for building purposes, to increase the marketable value of the estate, and thereby to become enabled to pay out the State at par, is a little episode, which, though strictly and on the face of it only a matter of finance, in reality goes to the very essence of all that marked, for good or ill, the subsequent proceedings of the Commissioners. It is a fact that no sooner had they obtained possession of that beautiful rural expanse, consisting of the Gore House estate, and other adjacent properties, than in their greed for gain they commenced parcelling it out for building purposes, and continued so doing until they had reduced that noble domain, professedly destined to be appropriated as the "common centre of union for the various departments of science and art connected with industrial education," to the miserable site, such as we see it, of the Royal Albert Hall and the Royal Horticultural Society, with their connecting arcades, at present devoted to the purposes of the International Exhibition; the whole presenting the aspect of a rather large —larger than it looks—urban square, with very ugly brick and glass surroundings built up close to the edge.

The statement of the Royal Albert Hall Commissioners of 1865, already referred to, speaks of the said hall as only "a prominent and essential feature" of the great "central institution" which was so much required; and. with adjacent garden (which, however, being under another occupancy, is not available to it), it is the "institution" itself; and the committee state that they intend it to be one "on a scale commensurate with the wants of the country."

But what wants of the country? The committee enumerate the following as the objects to which the Hall was intended to be available:—

a. Congresses, both national and international, for the purposes of science and art.

b. Performances of music, both choral and instrumental, including performances on the organ similar to those now given in various large provincial towns, such as Liverpool and Birmingham.

c. The distribution of prizes by public bodies and societies.

d. *Conversazioni* of societies established for the promotion of science and art.

e. Agricultural and horticultural exhibitions.

f. National and international exhibitions of works of art and industry, including industrial exhibitions by the working classes, similar to those recently held successfully in various parts of London.

g. Exhibitions of pictures, sculpture, and other objects of artistic or scientific interest.

h. Any other purposes connected with science and art.

Of this diversified scheme of operations, rendered all-comprehensive by the last short item, it must be obvious that to several important portions the Hall, from the very conditions of its structure, is wholly inapplicable. What convenience, for instance, does such a Brobdignagian theatre or circus afford for a congress, or a *conversazione*. or for the distribution of prizes by public bodies and societies (most of which, by the way, have adequate premises of their own for their own little purposes), or for agricultural or horticultural exhibitions, or, indeed, exhibitions of any kind? The committee's "statement" mentions the corridor, lighted from the top, which is situated above the boxes, and leads into the gallery, as "affording room for the exhibition of pictures and sculpture." But every person of experience knew from a glance at the plan itself, and before a brick was laid, that from the very conditions of the lighting of this corridor, being partly from the top, and partly through a side opening into the Hall itself, it would be wholly inapplicable for any such purpose as that contemplated; whilst its great height above the basement would, in itself, be an insurmountable objection to its employment in any matter in which a sight-seeing public should be expected to take part. As it is, this corridor, in connection with the International Exhibition, is hung with architectural drawings of all nations, which very few people care to look at, but which all can see without much fatigue, who choose to pay a penny for a seat in the "lift, which runs up and down every two or three minutes.

For all purposes of congress, *conversazioni*, or exhibitions in connection with art or science, therefore, this gigantic Hall is undeniably useless. There remains only music, "both choral, and instrumental," including the organ after the fashion at Liverpool, Birmingham and other provincial towns; and how as to the Royal Albert as a purely "Music-hall?" We fear the general verdict is against it, and that the idea of a "remunerative investment," held out by the committee as an inducement to the too-credulous public to subscribe for boxes and stalls, will turn out to be a delusion.

In truth, the financial prospects of the Royal Albert Hall, when looked at coolly, and by the aid of common sense, are by no means cheerful—if indeed they do not suggest matter for serious misgiving on the part of the illustrious personages who, as Commissioners of the 1851 Exhibition, or as committemen of the Hall itself, will be held morally, if not pecuniarily, responsible for the failure, whenever it occurs, of this unwise monster enterprise. In looking at this question, which we shall reserve for a future occasion, we shall consider the Commission of 1851, the Hall Committee, Horticultural Society, and the International Exhibition Committee, as one confederate body, which in truth they are—it being the fact that the governing bodies of all consists of an assortment of the same names—and that although distinct charges of admission are levied upon the public for the International Exhibition, the Horticultural Gardens, and the Albert Hall, they are to all intents and purposes a joint concern, in which the sole object is to scrape as much money as possible out of the pockets of the public, for the support of a clique in the affairs of art and industry, of which they are representatives. In this pursuit of coin their genius and capacity are like that of the trunk of the elephant. Nothing is too large, nothing too diminutive, for their grasp. A state visit from the Sovereign, followed by one from the Heir Apparent and his consort, in a single season (to say nothing of occasional manifestations of minor illustrious notabilities), would be a little fortune to any ordinary theatrical manager; but in Albertia, even the orphan and the pauper boy may be made use of, under the auspices of a prince of the blood, to wring a few shillings out of an enlightened and aristocratic throng. For Thursday week, for instance, was announced a grand review of four thousand boys, belonging to the Royal Greenwich Naval Schools, the Orphan Asylum, and some of the schools connected with various parish unions, under his Royal Highness Prince Arthur; the said review to take place in the Horticultural Gardens, admission, one shilling, reserved places one shilling extra; to be followed by a performance by the bands of the said schools in the Royal Albert "Music" Hall, to which was payable another shilling for admission and another extra shilling for reserved seats. The fact of dragging these poor, not over-fed boys from all parts of the metropolis and its suburbs for a day's drill, and all to make a West-end holiday, was bad enough; but what was worse was that last Thursday happened to be a wet day, the rain falling throughout the whole proceedings, which from first to last occupied, out of doors, over a couple of hours, to say nothing of the miseries of the drying process afterwards under cover. Under similar circumstances a review or inspection of troops would probably have been put off, out of regard to the health of the soldiers (whose loss would be a loss of money); but no such consideration was shown for the poor pauper boy, whose loss would be a saving. Besides, the enlightened public had paid their money, and would have had a right to demand it back if the performance did not take place: and so the "review" went on to the end; and the Royal Prince, after congratulating the poor little fellows on their performances—which would fit them, he said, for soldiers if for nothing else—was kind enough, in a jocular mood, to express a hope that they would be "none the worse for their ducking"—a hope in which we join, not without misgiving however, nor without some feeling of resentment at the whole transaction.

With this little episode, so graceful in itself, so important in the interests of art, science, and public industry, and so creditable to the royal, noble, and influential personages concerned in bringing it about, we close our first paper on the origin, rise, and progress of Albertia.

Omicron.

ON THE HISTORICAL DEVELOPMENT OF ORNAMENTAL ART.

THE thirty-sixth lecture of this course was delivered by Dr. G. G. Zerffi, at the South Kensington Museum, on Tuesday afternoon last. With reference to the cathedrals of the 12th, 13th, 14th, and 15th centuries, and their style of ornamentation, the lecturer alluded to the well-known sketch-book or album of Villard de Honecourt, a celebrated French architect of the middle of the thirteenth century. Although there were marked discrepancies between some of his sketches and the details sketched, his sketch-book was a very valuable study for artists who should seek to work in the way he worked. He was no mere copyist. He generally sketched from memory, and yet, nevertheless, succeeded in preserving the spirit of the works he wished to portray. Even where he did sketch on the spot he rejected much of the detail, or remodelled it considerably. Whatever inaccuracies of drawing might be found in the book, it would well repay study, as showing how an artistic mind could deal with and modify existing forms. True, much if not all the figure-sculpture of those days was ill-drawn, and proportioned without any regard to the principles of anatomy. But this fact was no proof that Mediæval artists could not, had they been allowed to develope their artistic capabilities to the fullest extent, have delineated the "human form divine" with as much perfection and grace as did the Greeks. But the dogmatic ecclesiasticism of those times taught that to study the body was in itself a sin, and although most of the figures had some fault of proportion, such as being too emaciated or ape-like, or having heads too large or arms too long, still, in every figure in all the churches and cathedrals of those times in which figure ornamentation was most used (Chartres, Westminster, Rheims, or Cologne, for example), there was to be found a powerful, almost Classic simplicity and grandeur. The persons represented appeared to be something more than mere lifeless blocks of stone. There was, so to speak, an appearance of *soul* in them. These characteristics were well exemplified in the figures of prophets and evangelists in the ruins of S. Mary, York. The forms of animal life other than human were better proportioned by the Mediævalists. Among the principal animal forms depicted in stone were the boar, wolf, swan, horse, cat, lamb, &c. The delineation of these animal forms was excelled in because there was less restriction on their study, although the too-earnest and too-exact study of Nature in any form was deprecated by the ecclesiastics, because Nature was represented as essentially sinful. With the Greeks, on the other hand, Nature was deeply studied and admired, and the result of such study culminated in the beautiful sculptures of Phidias and Skopas. In Gothic art an interesting feature was that the human figure was divided into and studied by means of triangles. The Egyptians had made use of this mode of studying the human figure, but with them the square was the basis, and not the triangle. This mode of studying the human form would lead to a trigonometrical explanation of the extreme accuracy and symmetry with which groups of figures were arranged in and over tympana and pointed arches of every size and shape. Careful observation would show that it was to this means that the rhythm and proportion so manifest in Gothic buildings of the best periods were attributable. The lecturer advised his hearers not to become fanatics either for Gothic or Classic architecture; what was wanted now-a-days was an architecture suited to modern requirements. We had not the same institutions nor the same religious opinions as the Greeks; therefore, for us to erect a Greek temple was an anachronism. What was true in this sense regarding the Greek temple was true also of the Gothic church or cathedral. The Greek and the Gothic periods had distinctive modes of life and thought of their own, and, necessarily, those distinctive characteristics evolved distinctive kinds of art. To copy literally for present-day purposes a rose-window, or a trefoil, or cinquefoil opening, was meaningless. The present age must develope an architecture and an art of its own, for unless the productions of the architect reflected the sum total of modern acquirements they were not really works of art. The Gothic churches of the thirteenth to the sixteenth centuries were literally the petrifactions of the ideas of the period in which they were constructed. Grotesques, witches, goblins, dragons, imps—all were believed in in those days, and were accordingly depicted. Throughout the entire Mediæval period there was a continual action and reaction of life on art, and art on life. The Mediæval period was appropriately and conveniently divided into centuries, each century marking the prevalence of a different phase of the style. The thirteenth century Gothic, with its severe simplicity, might well be termed Classic Gothic. The fourteenth century was coincident with the Geometrical Decorated period. In the fifteenth century Perpendicular was in the ascendant. These styles all led up to each other by a gradual development. After noticing the influence of the various trade guilds on the art of the Middle Ages, the lecturer referred to the present system of "articling" pupils to the architectural profession, too many of whom, the premium once paid, were left to shift for themselves. For training young architects or any other body of artists a certain amount of supervision by a master was absolutely necessary. Left to themselves pupils rashly and impetuously declared for this and against that, and thus all art progress was retarded. Until architects (and especially young architects) ceased to display such strong partisanship as Classicists and Goths there was little hope for a real, living, nineteenth-century architecture; for, if such was to be developed, it must be based on all former styles, certain elements or features in all being blended together, in a more or less modified form, into one harmonious whole, suited to the requirements of modern progress.

In conclusion, the lecturer described in detail a number of Mediæval caskets, &c., which were exhibited in a case, some of them being most elaborately ornamented with various patterns of foliated and geometrical bands and armorial shields, carved with great excellence.

PARLIAMENTARY NOTES.

THE SOUTH KENSINGTON MUSEUM.—Mr. W. H. Gregory gave notice on Monday that on going into Committee on the Civil Service Estimates he should call attention to the multifarious and incongruous collection massed together in the South Kensington Museum, and move for the appointment of a Royal Commission to define what should be retained, and what set apart for circulation in the provinces.

NATURAL HISTORY MUSEUM.—Replying to Mr. C. Bentinck, Mr. Ayrton said he was led by the architect to believe that the elevations and plans of the building would be ready by the 8th or 10th of next month, and he proposed, therefore, to defer the vote to the latest day at which it could be taken. If the plans were obtained from the architect before the vote came on, they would be exhibited in the library of the House; but if they were not delivered in time, it would be necessary to proceed with the vote in their absence.

PUBLIC MONUMENTS.—THE DISMISSAL OF MR. BARRY.—On the vote of £99,017, taken on Friday, to complete the sum required for the repair of public buildings and the maintenance of public monuments, Mr. Hermon objected to the items of £1,000 for additional accommodation for the Civil Service Commission, £650 for two additional pay-rooms in the office of the Paymaster-General, and £350 for the Admiralty Registry. He moved that the vote be reduced by £2,000.—Mr. Ayrton said the Admiralty Registry was for the Court of Admiralty. The other items were to afford accommodation urgently required. The amendment was negatived.—Mr. Mellor moved that the vote be reduced by £255, the charge for repairing certain royal monuments in Westminster Abbey.—The Chairman said as there had been an amendment already that the vote be reduced, another amendment was out of order.—Mr. Ayrton said the Dean and Chapter of Westminster were not bound to repair these monuments, which were the property of the Crown, otherwise he would not have brought the matter forward. The vote was agreed to. £17,000 was voted for furniture and the repair of furniture in public departments. £60,650 to complete the sum required for the acquisition of land for the new Palace of Westminster was also voted, after an explanation by Mr. Ayrton that the land purchased was in Abingdon-street, and that it had been purchased in pursuance of an Act several years ago. On the vote of £23,078 to complete the sum required for the maintenance, repair, and ventilation of the Houses of Parliament, Mr. C. Bentinck called attention to the conduct of the Commissioner of Works in dismissing Mr. Barry, the architect, who had looked upon the office as honorary, but who, when dismissed, properly sent in a bill of about £2,200. The conversation on this vote was continued till the hour for suspending the sitting had almost arrived. —Mr. Ayrton, in reference to the services of Mr. Barry, said they had been called disinterested, but when he was no longer employed, he sent in a bill for payment, which ran over two or three years, and was paid the full market value put upon them by himself. Mr. Barry's employment ceased because it was thought to be inconsistent with the public interest. Progress was reported.

NEW STREET FROM TOTTENHAM-COURT-ROAD TO CHARING-CROSS.—Mr. Raikes on Thursday week asked the hon. member for Bath whether a proposal for the expenditure of £200,000 on the new street from Tottenham-court-road to S. Martin's-place, now intended to be made under the provisions of a Bill at present before Parliament, had been entertained by the Metropolitan Board of Works; whether eminent contractors had not expressed their willingness to make this new street free of cost; and, whether the Metropolitan Board of Works seriously contemplate so large an outlay of money to be obtained from the ratepayers of London under those circumstances.—Sir. W. Tite replied that the Metropolitan Board did propose to contribute £200,000 for the construction of the street referred to, which would be 60ft. wide. They never had any offer to do the work for nothing—and if they had had such an offer they would have been very happy to accept it. In 1864 an Act was passed for making a railway communication connecting the northern and southern railways; but four years elapsed, and nothing came of that Act. The Metropolitan Board were then requested to take up the question of the formation of a new street. Another proposition came from a respectable quarter for the construction of a railway on the old line, and an Act was passed for the purpose. An application was then made by Mr. George Elliott in favour of the project of 1864, and he mentioned certain names as those of contractors who would undertake the work; but the Board having inquired into the matter, thought they had better have nothing to do with them. It was ascertained that the cost of the street alone would be at least half a million of money; but the railway company, wishing to construct their line under the street, offered to complete it for £200,000, and he thought the Board were quite right in accepting that offer.

LEAKY RAILWAY BRIDGES IN LONDON.—Mr. Peck asked the President of the Board of Trade whether his attention had been called to the leaky state of many of the railway bridges spanning the public thoroughfares of the metropolis, and the consequent inconvenience to people passing under them; if so, whether he purposed adopting any measures to compel companies to keep their lines in proper order.—Mr. Fortescue said there was a great difference of opinion among high authorities as to the proper duties of the Board of Trade, but he had never heard anyone contend that they went to the extent implied by the question. Their powers were limited to the protection of the life and safety of persons travelling on the lines, and he did not think they had power to stop the leaking of railway bridges, or to protect passers-by from a constant drip.

LONDON STREET TRAMWAYS (EXTENSIONS, &c.) BILL.—On the consideration of the report of the Committee on this Bill, on Thursday week, Mr. B. Hope opposed the measure. moving that the report be considered that day three months.—Mr. Sclater-Booth, in seconding the amendment, said he was no opponent of tramways, but he considered that as only two years had elapsed since the first scheme was sanctioned, they had far too little experience of the operation of the system to justify Parliament in extending it to the more crowded portions of the metropolis.—Mr. T. Chambers supported the amendment, observing that his constituents were opposed to the Bill. Not having the consent of the local authorities, these promoters could not go to the Board of Trade for a provisional order, and they therefore brought in a private Bill, to rescind the provisions of the general Act of last year, in favour of their scheme. The asphalte pavement answered every purpose for which tramways were laid down.—Mr. P. Wyndham also opposed the Bill, and asked the House to bear in mind that the proposal was nothing less than that the whole of the Queen's highway should be given to certain companies.—Mr. Dent supported the Bill. It was shown to the satisfaction of the Select Committee that these tramways would be a great public convenience, and the only evidence on the other side was as to what might happen in consequence of their construction.—Mr. A. Guest opposed the Bill. —Mr. Mundella looked upon the opposition to tramways in the same light as the opposition to railways when they were first introduced.—Mr. Cowper-Temple considered tramways ill-adapted for public convenience, and objected to the centre of the most important thoroughfares being handed over to trading companies.—Mr. C. Fortescue agreed in the report of the Inspector to the Board of Trade, that tramways should be introduced gradually, and with caution. He suggested that that part of the Bill which authorised the construction of the tramway in Oxford-street should be struck out.—Mr. C. Forster, on the part of the promoters of the Bill, acceded to this suggestion, and offered to postpone the Bill with that view.—Mr. B. Hope would not consent to the postponement. The House divided: for the Bill, 176; against it, 215. The Bill was therefore lost.

THE PALACE OF WESTMINSTER.—MR. BARRY.—On the adjourned vote of £23,078 for the repairs of the Houses of Parliament, on Tuesday, Mr. B. Hope, referring to a speech made at the conclusion of the discussion on Friday evening by the President of the Board of Works, who intended to bring in a Bill to teach and enforce better manners to people visiting the parks, observed that the right hon. gentleman might very properly be characterised as the Chesterfield of the nineteenth century. The right hon. gentleman made a statement respecting Mr. Barry, that Mr. Barry's services were by no means disinterested. This was an imputation against the good fame of that gentleman. (No, no.) He said yes, because there was a covert meaning hidden behind the word.—Mr. Ayrton said if the hon. gentleman was quoting his words, it was desirable he should quote them as they were delivered, and with the context, and then he would find that they were not open to the interpretation sought to be put on them. —Mr. Hope said testimony in favour of Mr. Barry had been given by the Chancellor of the Exchequer and the First Lord of the Treasury during the discussion on the state of Westminster Palace on the 13th of May, 1870, when they paid him that tribute which a public servant of his eminence deserved. The First Commissioner, however, said that Mr. Barry's suggestions would lead to an expenditure of hundreds of thousands of pounds. Now he had an account furnished by Mr. Barry, showing that the works he had done on that House, irrespective of the works he executed as his father's successor, cost £66,000. He put it to the Committee, what could they think of a Minister who did not know the difference between £66,000 and hundreds of thousands of pounds. He protested against the Treasury Bench being made the arena out of which to vent private feeling of liking and disliking in regard to public servants whose profession rendered them incapable of meeting the taunts thus thrown out. Was such language to be tolerated for the sake of passing a vote at ten minutes to seven o'clock? Even at ten minutes to seven Cabinet Ministers had better be careful whom they left on the Treasury bench, and in whose mouth they left the vindication of their good fame. If the Chancellor of the Exchequer had been present Mr. Barry's name would not have been aspersed, and he (Mr. Hope) would have been spared the vindication of that gentleman's character.—Mr. Ayrton said that as the hon. gentleman had not been present on the occasion to which he referred, he thought it would be agreeable to him to be set right as to any misapprehensions under which he might have laboured. For his own part, he should consider it a great service if, when he was speaking on a subject of which he had no personal knowledge, some person took the trouble to set him right. He begged to say that the remarks he made on the former occasion did not in the least bear the construction put upon them by his hon. friend. A great deal had been said of Mr. Barry's disinterested services, but as Mr. Barry had sent in a bill for those services and been paid the full amount, he did not think they were entitled to be considered "disinterested."—Mr. B. Cochrane inquired what amount.—Mr. Ayrton said £2,000 and upwards. He did not bring the subject before the House, and the name of Mr. Barry was in no way connected with the vote, but an hon. member having revived the subject, he considered it right to state the fact as it was. What he said was that suggestions had been made by Mr. Barry which involved a vast expenditure, and that one of the advantages which would result from the termination of his engagement was that all such suggestions to the Commissioner of Works would cease. An eminent prelate in the House of Lords stated that no less than £30,000 had been expended in bedizening with gold and ornaments a vault which had in former times served as a coal-cellar and lumber-room, and now remained a spectacle of most absolute waste of public money. It was competent for Mr. Barry to say this was done at the request of the First Commissioner of Works at the time; but there was a kind of action and reaction between the two officials, and the advantage he referred to was that they had got rid of all this sort of thing by putting an end to the connection between the Office of Works and Mr. Barry. What had been projected during the last few years? Nothing less than the building of a new House of Commons and a new House of Lords.—Mr. B. Cochrane: It was the report of a Committee.—Mr. Ayrton did not care for that. They were constantly hearing these suggestions, which involved enormous expenditure; but now that the connection had ceased, there were none of these projects for building new Houses of Parliament. He had only given one illustration, but he heard the member for Whitehaven himself condemn the cloister erected in New Palace-yard at an enormous expense. Works had been carried on in the most expensive way in the past, and there had been an abundant crop of suggestions to carry on works still more expensive for the future, while hon. members failed to get anything done which was for their own convenience. He might give another instance of extravagance, in the setting up of a very indifferent statue in stone, and the plastering it all over with gold to make it beautiful.—Mr. Hope: What statue?—Mr. Ayrton: A statue in the Royal Gallery. With regard to the vote now before the Committee, several questions had been asked respecting it on the previous occasion. One hon. gentleman wished to know whether a statement he had seen respecting the display of an electric light had been well founded. He (Mr. Ayrton) had been in communication with a scientific gentleman to ascertain whether the light would be certain, how far it could be seen, and what would be the cost. These investigations were not yet brought to a close, and he was not in a position to say what the cost would be. He hoped, however, they would be able to make an experiment with the light before the close of the present session.—Mr. Cowper-Temple said after the allusion of the right. hon. gentleman to the work in S. Stephen's Crypt, which was done under his (Mr. Cowper-Temple's) superintendence, he must say a few words. In the former debate the right. hon. gentleman, in trying to justify his treatment of Mr. Barry, said the House should not think only of the £2,000 which it had had to pay that gentleman, but of tho thousands and hundreds of thousands which it might have had to pay him if he had remained That assumed that the Chief Commissioner of Works was entirely under the influence of Mr. Barry, but no one who knew the right hon. gentleman would suppose that he was so very soft. The right hon. gentleman said that the vault, as he termed it, was absolutely worthless.—Mr. Aytron: Useless.—Mr. Cowper-Temple: According to the right hon. gentleman, then, one of the best specimens of the thirteenth century architecture in this or any other country was totally useless. He would confidently appeal to any professional architect whether it was not most valuable. (Mr. Ayrton here made a remark which was inaudible in the gallery.) The right hon. gentleman admitted that it was valuable, but objected to its being bedizened with gold—that is, to the attempted restoration of the structure to the state in which it was in the time of Henry III., when it was brilliantly ornamented. As to his statement that this bedizening with gold cost £30,000, he believed that in reality the charge of the contractors, Messrs. Crace, who no doubt lost money by the work, was only £600. As to the economy for which the right hon. gentleman claimed credit in cennection with the new dining-room, it was secured by spoiling Mr. Barry's design. And he might add that that design would have had the advantage of being final, and supplying a dining-room for the House of Lords as well as one for the House of Commons. He regretted that the right hon. gentleman should, speaking with the authority of First Minister of the Crown, have launched out such vague and unfounded accusations against Mr. Barry in reference to expenditure.—Mr. B. Cochrane felt that the right hon. gentleman ought to take that opportunity of stating that he did not intend to cast those imputations on Mr. Barry into which he was led by his florid style of speaking.—Sir. F. Goldsmid believed if was also understood that Mr. Barry was to be compensated for his services, and although the fact of his dismissal might have accelerated the period at which he sent in his account, yet it was perfectly idle to say that the First Commissioner of Works had brought a cost of £2,000 upon the country.—Lord J. Manners expressed his entire belief that the charges brought by the First Commissioner of Works against Mr. Barry were totally and absolutely unfounded.—Mr. Melly should be sorry if it went forth to the public that there was not a representative of the tax-payers in that House who was prepared to thank the right hon. gentleman, the First Commissioner of Works, for the admirable manner in which he had filled his office and discharged the painful duty imposed upon him by the extravagance of former officials in restricting the expenditure of the country.—Mr. Ayrton recollected seeing the vault—Mr. B. Hope: Chapel. (A laugh.)—Mr. Ayrton said the vault. (Laughter.) Perhaps the hon. gentleman did not recognise the Reformation, but he (Mr. Ayrton) recognised it and the law of the land. After the Reformation the vault was converted into a coal-cellar, and then into a dining room for the use of the Speaker. He had no hesitation in saying that it was not necessary to spend a shilling on that vault for the purpose of preserving the recollection of its architecture, as handed down to that day. Previous to the Reformation it had been used, not as a Chapel Royal, but as a mortuary chapel for the masses of inferior persons connected with the Court and the establishment of S. Stephen's Monastery.—Mr. Cowper-Temple was at a loss to see the connection between the right hon. gentleman's Protestantism and the calling of a very ancient crypt by a bad name.—Mr. Ayrton: The proper name of this structure before the Reformation was S. Mary's-in-the-Vault, and when S. Mary was taken out, only the vault remained.—Mr. Dillwyn remarked that though the restoration of this vault might be a very artistic work, yet he doubted whether the country appreciated it, and the fact remained that it had cost £30,000.—After observations from Earl Percy and Colonel Sykes, Mr. Mundella protested against undue parsimony levelled against the ancient historical monuments of the country.—Mr. Muntz defended the first Commissioner, but remarked that the discussion had no connection with the vote.—Mr. Smith supported the view of the hon. member for Sheffield.—Vote agreed to.

Various Public Works.—£60,500 for the erection of new offices in Downing-street.—Lord John Manners complained of the dilatory manner in which these great public works were carried out. Vote agreed to.—£1,150 repairs and restorations of the Chapter-house, Westminster. Agreed to.—£11,083, one-half the expense of building sheriffs' courts in Scotland. Agreed to without a division.—On the vote of £20,500 to complete the sum necessary to pay for the enlargement of the National Gallery, Mr. Gregory impressed upon the Government the necessity of at once entering upon clearing the foundation of the building.—Mr. Ayrton replied that that the work of clearing was actually proceeding, and the plans for the building itself had been almost settled. The votes of £15,500 for the new buildings of the College of Glasgow University, and £9,000 for the Industrial Museum of Edinburgh, passed.—The following votes were agreed to: £30,500, new buildings in the court-yard of Burlington-house; £123,995 for the works of the Post-office and Revenue Department; £3,970 for repairs, &c., to British Museum, and £36,450 for new buildings for county courts.—On the vote of £42,547 for the works in progress in the Science and Art Museum at Kensington, Mr. Osborne said he was ready to vote moderate sums for the education of the people by means of museums, but an expenditure of £12,000 or £13.000 for the decoration of these galleries was shameful and monstrous. South Kensington was nothing more than a foundling hospital for the reception of pictures of doubtful pedigree. (Laughter.) Under the pretence of teaching their fellow countrymen, some people were making snug berths for themselves. A stop must be put to this unprofitable expenditure of public money, and the sooner it was done the more it would be to the credit of the House. The vote was agreed to. On the next vote of £97,200 for the survey of the United Kingdom (replying to Mr. Bouverie), Mr. Ayrton said he had instituted inquiries as to the way in which the survey was going on, but he was unable to say whether a map upon a uniform scale for the whole Kingdom would be completed in a shorter time than fourteen years, which it had been estimated the work would take at the present rate of progress.—Agreed to.—On the vote of £52,426 to complete the sum to defray the charges for the construction of harbours under the Board of Trade, Mr. G. Bentinck said there were no greater monuments of human folly than the harbours so called on which this money was expended. Take the harbour of Dover. A right hon. friend of his had estimated that if they carried out the works that were projected an expenditure of eight millions would be required, and that it would take 200 years to execute the works. It was not a harbour at all, and was of no use except that the passengers might land on tho piers. Alderney was the worst case of all. It was nothing but a nest of rocks closo to the sea, and neither a harbour of refuge nor a harbour of shelter, but a pier has been thrown out just in the wrong direction. There was no seaman who would take a vessel into Alderney except in very fine weather. In Holyhead they had made the same mistake with regard to the pier. In order to raise the question in a definite shape, he moved that the sum of £21,452—the vote for Alderney—be omitted.—Sir J. Elphinstone seconded.—Mr. Baxter said he agreed with almost every word that the hon. member for Norfolk had uttered. The works for Dover, however, were in rather a hopeful state, and he hoped that the vote next year—£22,500—would be the last. With regard to Alderney, last year much damage was done by a tremendous storm, and the Government sent down Mr. Hawkshaw and another engineer to make a report. They reported that £220,000 would be required to complete the breakwater. But it was very doubtful whether the stone of which the breakwater was built was fixed or stationary. In the course of a few months they would have the final report of the engineers, and it would then be for the Government to decide whether the House was to be asked for another large sum to complete the works at Alderney, or whether they would adopt what he considered the sensible course of abandoning the works altogether. He hoped, under these circumstances, the hon. member would not think it necessary to divide the House on the subject. After some further discussion, the amendment was agreed to, and the vote, reduced by the sum of £21,452, was agreed to.—The vote of £450 for Portland Harbour was agreed to.—£30,500 contribution to the fund for the Fire Brigade of the metropolis was agreed to.—£122,455 was voted for public buildings in the department of public works in Ireland; £3,976 for the restoration of the works of the Ulster Canal; £13,810 for lighthouses abroad; £800 for embassy houses; and £36,215 for chapels and consular houses.

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Subsidence of a Railway.—On Thursday week an accident of a singular nature occurred on the Manchester, Sheffield, and Lincolnshire Railway, between Guide Bridge and Dukinfield stations. At the spot indicated the railway line runs parallel with the canal, and the river runs on the opposite or lower side of the rails. A main sewer from Ashton runs under both railway and canal, and empties itself into the river, and this giving way caused the down line of rails to fall, leaving an opening about 12ft. in diameter. The sewer being pretty full, carried away a considerable quantity of the gravel from under the rails. Fortunately, one of the men employed in keeping the permanent way happened to pass shortly after the occurrence, and went to the Dukinfield station and caused the line to be blocked.

Building Intelligence.

CHURCHES AND CHAPELS.

Ashbourne (Derbyshire).—The new Free Church was opened on Whit-Sunday. The church stands back from the road upon an elevated piece of land, and is approached by a broad flight of steps. The style of architecture adopted is Romanesque. The plan is a parallelogram of 75ft. by 42ft. The roof is supported by iron shafts, dividing the interior into nave, and north and south aisles. At the east end is a chancel 30ft. wide, with semicircular apsidal termination. Adjoining is the minister's vestry, underneath which is a vault, containing the heating apparatus. At the west end there is a tower (64ft. high and 22ft. 2in. square), of somewhat massive appearance, the lower part forming the principal entrance. At the south-west angle is a circular staircase leading to a gallery at the west end of the church for the choir and an organ. In the belfry story are three semicircular-headed lights, well recessed on each of the four sides. There are clock dials on three sides of the tower. Inscribed on the tympanum over the west entrance is the text of Scripture, "Where two or three are gathered together in my name, there am I in the midst of them." The roof externally is in one span, but divided internally into three semicircular vaultings over the nave and aisles, with intersecting vaults over each window, throwing moulded ribs stained and varnished. At the east end intercepting the nave and the chancel, and at the west end intercepting the nave and tower, are bold semicircular arches concentric with the line of ceiling, and having a good effect. The pulpit and reading desk are of pitch pine. The communion table is of oak, standing in an elliptical inclosure in the centre of the chancel. The whole of the internal joinery is stained and varnished. The walls are plastered, finished in rough stucco, and formed into panels by flush mouldings. The architects are Messrs. Stevens and Robinson, of Derby; the builders, Messrs. Critchlow and Ward, of Uttoxeter. The church has been built by Francis Wright, Esq., of Osmaston Manor. The estimated cost is £7,000.

Bloxwich.—A new chapel is being erected at Bloxwich. It is to accommodate 260 people, and will also be used as a school. There is also a room for meetings, and a small house adjoining the chapel. The architect is Mr. C. Chamberlain, of Walsall. The cost will be about £600. Messrs. Tonge and Son, of Walsall, are the builders.

Derby.—The handsome church of S. Luke (Bishop Lonsdale's Memorial Church), in Parliament-street, Derby, was consecrated on S. John the Baptist Day. The construction of the building has been carried out by Mr. Joseph Fryer, of Derby, under the direction of Messrs. Stevens and Robinson, architects. The church is thoroughly monumental in its character. The generally-received type of church, with nave and aisles, has been in a great measure given up, and the plan has been so arranged that the whole of the seats for the congregation are within the nave of the building. The nave is 42ft. wide, by 84ft. in length, and 46ft. to apex of the vaulted roof. Open framed seats are arranged on each side of the central passage. On each side of the nave are arches opening into narrow stone groined aisles which are used as passages to the seats. These aisles also form the abutment to the nave roof, and outside buttresses are therefore unnecessary. At the east end of the nave a large arch opens into a chancel 38ft. long, by 31ft. wide, terminating with a polygonal vaulted apse. The style of architecture chosen for the building is that of the Transition period from Early English to Decorated Gothic. The exterior of the building is very simple—a range of bold gables over the windows on each side elevation breaks the outline. The site upon which the church is built was found to have a very considerable fall towards the east, and advantage has been taken of this, and under the chancel is constructed a crypt, which is fitted up complete for daily prayers and occasional services, with communion-table, choir stalls, organ, and font.

Lincoln.—The foundation stone of the new church of S. Martin, Lincoln, was laid on Tuesday week. The church is to be in the Decorated style of Gothic architecture, and will consist of a nave, with north and south aisles, chancel, vestry, organ chamber, south porch, and a lofty tower and spire at the south-east angle of the church. The clerestory will be a good one, each bay being pierced with three-light windows, with traceried heads and detached shafts having moulded caps and bases. The nave is to consist of five bays on each side, with open-timbered roof, the principals curvilinear ribs, with trefoiled blade. The church will accommodate 800 people, and the contract for the building is taken by Mr. George Johnson, of Nottingham, Mr. W. Goodbarn being clerk of the works. Mr. Beckett, of Nottingham, is the architect.

Offham.—An effort is now being made to restore the fine old parish church of S. Michael, Offham, Kent, which has fallen into a state of decay, and is quite unfit, in its present condition, for the decent performance of Divine worship. The architect's report says the church dates down from the eleventh century, and with all the distinctive features of each period left. The nave is Norman, having one of the little original windows remaining on the south side, very high up in the wall, with traces of others. It was intended to have added a south aisle to the nave, probably in the thirteenth century, but no traces beyond the constructive arches on the south wall exist. The chancel is Early English, with a Third Pointed east window; and with the exception of the "low side window" in the south-west side, the original chancel remains pretty much as built, but with a later roof. What seems to be a Norman tower is built on the north side of the chancel, with the addition of an upper stage as late as the fifteenth or sixteenth century. The south porch is later, but good. The interior is full of high square pews, with a western gallery; some interesting remains exist where side altars stood. The original Norman chancel arch has been filled in with a Third Pointed arch, with the small hagioscopes still remaining.

Sheffield.—A new Baptist chapel in the Glossop-road, Sheffield, was opened on Thursday week. The chapel is situate at the junction of Sherwood-road with the larger thoroughfare, and is Gothic in style. The main entrance is on the Glossop-road side. The tower is carried up over one of the staircases leading to the gallery, and contiguous to the front gable; it is 140ft. high, and is terminated by a spire, pinnacled, and octagon in form. The sides of the church are lighted with two and three-light tracery windows, alternately placed. The nave roof is open-timbered, but the roofs above the side galleries have, for acoustic reasons, been boarded over with red pine and varnished. The galleries extend round the building, being supported by light iron pillars. The floor of the chancel is laid with Maw's encaustic tiles. At the back of the end gallery are six class-rooms, ladies, vestry, &c,

BUILDINGS.

Bradford.—The foundation-stone of the new schools in connection with the parish church was laid on Saturday. The building (as shown by the plans prepared by Mr. John Lowe, architect, St. Ann's-square), will consist of a large room, 80ft. by 30ft. and two class-rooms, and provision is also made for future extension. The cost of the building, including fittings and boundary walls, will be about £1,400, and the contract for the whole work has been taken by Messrs. Neill and Sons, of Strangeways.

Essex County Gaol.—Alterations which have been going on for the last twelve months at the County Gaol, Springfield, are now nearly completed. The two blocks of buildings known as the A and B corridors have been extensively altered, the cells being increased in length about three feet. The outer walls of the old cells have been removed, and the cells carried forward to the old boundary wall, which now forms the outer walls of the cells. A new boundary wall has been erected, allowing of a passage between it and the cell doors of 6ft. wide. The works have been carried out from the designs of the county surveyor by Messrs. Saunders and Son, Dedham, at a cost of £4,420.

Mid-Lothian and Peebles District Asylum.—The plans for the Mid-Lothian and Peebles District Lunatic Asylum are now completed, and the work of erection will be proceeded with immediately. The preparation of the plans was intrusted to Mr. Wm. Lawrie Moffat, architect, North Castle-street, Edinburgh. The asylum, as planned, is in the form of the letter E, with a general height of two storeys. The style is Italian, of a plain character, with projecting eaves to the roof, the external walls being executed with squared and snecked rubble work, and the window and door dressings, the mouldings, spring-courses, base-courses, and other similar details being tooled. The accommodation is made to suit 200 patients of both sexes.

Messrs. Chadwicks, Adamson, Collier, and Co. have issued a private prospectus, inviting subscriptions to a new company, with a capital of £50,000, for acquiring and working the well-known fireproof construction business of Mr. William Philipps, of the Coal Exchange, and Southwark. The vendor transfers the business, patents, and goodwill.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. The Editor respectfully requests that all communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondence.]

To Our Readers.—We shall feel obliged to any of our readers who will favour us with brief notes of works contemplated or in progress in the provinces.

Letters relating to advertisements and the ordinary business of the Paper should be addressed to the EDITOR, 31, TAVISTOCK-STREET, COVENT-GARDEN, W.C.

Advertisements for the current week must reach the office not later than 5 p.m. on Thursday.

J. Vicary, Plymouth.—Thanks for cuttings.

Solens at Nottingham.—There was hardly wit enough in the communication to justify the peculiar style adopted.

Received.—J. S., J. T. & Son, T. C., G. & C., W. M. P., H. A., F. C. D., R. B., J. V., C. K., J. M. K., M. B., A. & H. E. W. G., J. S., Sax n, E. M., F. R. I. B. A., Art Critic, E. P. M., J. N., J. H., Dr. Z., G. W., W. R., J. M., W. W, N. C. & Co., H. O., T. S., W. S. S., R. H., E. R. C.

Correspondence.

PERSPECTIVE DRAWING.

To the Editor of the Building News.

Sir,—Of the value of this art to architects there cannot be the slightest doubt, and if our architectural competitions were uniformly decided by well-educated professional men of unquestioned integrity (which should be a necessary condition for the response of qualified practitioners in such contests), I cannot see the objection of your correspondent to perspective representations of designs being submitted. Mr. Lockwood's remarks on the power of thinking and drawing in perspective are quite mine, though I differ from him in regard to colour. Valuable as it is in pictorial representations, I hardly think it admissible in competitive collections of drawings, in which form and construction, fitness and purpose, are the leading features of the designs. I think, and I believe I am expressing the views of many practical members of the profession, that competition drawings for strictly architectural purposes should be confined to monochrome tinting—as sepia, if any such aid to simple linear expression is needed. If colour is at all admitted, it should conform to the rules of aërial perspective, and not, as frequently, add to the falsification of the design by the introduction of false and garish colours and foregrounds.

As to perspective, if qualified judges were to conduct competitions, the deceptions and trickeries practised under its name could not be perpetrated, and those who could not express themselves in the art would not comply, or get some one conversant with it to do so. But to shut out perspective drawings because many in the profession are, alas! ignorant, or because others make the art a means of delusion, is hardly wise.

The art of perspective was revived, with other branches of science, about the middle of the sixteenth century. It seems to have been invented as early as the fifth century (B. C.), and was known, according to Vitruvius, by Æschylus, Agatharcus, and Anaxagoras, and employed by the former in theatrical scenery. Of the theory of the art at this early period nothing is known; probably it suffered the general wreck of ancient arts in the middle ages, and the revival or re-invention of the science was inaugurated with the revival of painting by an Italian. The convergence of lines to points of distance, the horizontal line and point of sight, were discovered by Perussi and Guido Ubaldi, and these principles, it appears, formed the basis of Dr. Brook Taylor's well-known treatise on "Linear Perspective," published at the beginning of the eighteenth century. It may be interesting to know that Albert Dürer constructed a machine to trace in perspective. I will simply remark, from these facts, that, although the Mediæval architects were unacquainted with the science, they must have possessed some empirical rules to aid their conceptions of the real effects of their works, imperfect and erroneous as these were, to judge from manuscripts, &c. However, their ignorance is a greater reason why we should achieve proportionate results with the aid of this science; at any rate, the angular or oblique representations of buildings cannot be properly dispensed with, the want of the knowledge of correct visual representation—which I prefer to call it—being daily and painfully witnessed in many of our important designs and actual structures. Another point, equally important, is to take our perspectives from *accessible* points, or those from which a building is most seen.

For the information of some querists of the Building News, I would suggest Nicholson's "Perspective" as the most complete treatise on the principles of the art, in addition to Dr. B. Taylor's; though, as an elementary work, the treatise found in the "Carpenter and Joiner's Assistant," published by Blackie, is the best I have seen, and gives a very fair insight into the principles. I may add, perhaps an easier initiation in the science may be gained by models and instruments to facilitate the drawing, such as those invented by Ferguson, Turrel, Allason, Ronald, and others.

The want of proficiency in this art among architects is attributable, I believe, chiefly to the absurd mode of instruction generally adopted, which presupposes a pretty clear acquaintance with plain geometry. There are now many anomalies or misconceptions as to the application of perspective to certain objects which a clearer and practical notion of the subject would remove.

For many kinds of architectural drawing I believe the use and merits of isometric delineation are entirely neglected.—I am, Sir, yours faithfully,

Southampton. G. Huskisson Guillaume.

STEVINGTON CHURCH, BEDFORDSHIRE.

Sir,—May I beg the favour of being allowed, through the medium of your widely-read journal, to call the attention of archæologists and all who are interested in the preservation of our ecclesiastical antiquities, to the proposed restoration of the above church, which is to be carried out under the direction of a local architect and auctioneer; and as the list of tenders for the work appears in your last number, the operations may have already commenced.

I trust that your readers will acquit me of any personal motive in making this communication, but as I believe the architect appointed has hitherto confined his practice to the erection of chapels and schools of the Baptist and other persuasions, I have great misgivings as to the result, and fear it may prove another instance of injudicious but well-meant restoration (so called) by which irreparable mischief is done to so many of our village churches, those venerable and deeply-interesting relics of former ages. If the committee would but submit the plans to some well-known and competent ecclesiastical architect, or the archæological and architectural societies use their influence, the impending danger may be averted.

According to Parker's "Ecclesiastical and Architectural Topography," Stevington S. Mary is a good Early Decorated and Perpendicular church, Early English nave, arches and font, Perpendicular north and south porches, some good open seats, remains of a painted rood screen, paintings on roof, &c.; a brass to Thomas Salle, 1422, the figure in plate armour.

The church, with all its appurtenances, was given to the priory of Harewold or Harrold, by Baldwin de Arda, in the time of King John. There is also a barn of the fourteenth century, supposed to be the great tithe barn of the priory, at a little distance to the south of the church.—I am, &c.,

Ecclesiologist.

AN ANTI-GOTHIC GOTH.

Sir,—I am bound to level a lance in defence of the "title, style, and dignity" of the Building News assailed by "C. E." in your last. He complains that whilst you, sir, "condemn pseudo-Gothic taste, you commit the inconsistency of heading this paper with barbaric type." The inconsistency or barbarism I cannot for the life of me discover, and deny its existence. "C. E." appears to be a sort of literary "Red" of extremely barbaric type, who, in his repugnance to an ancient title would fain punish by beheading! Though "C. E." may not appreciate the ornate heading of this journal, I beg in earnest to assure him that others think it both appropriate and beautiful.—I am, &c., M.

THE NATIONAL GALLERY.

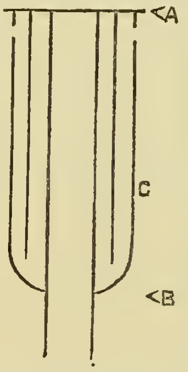
Sir,—I am glad your contributor, "H. O.," has called attention to the neglect and shortcomings of the authorities in what concerns the interests of the public in their collection of pictures, and their due enjoyment thereof, and I hope it will not be without avail. In connection with this subject, however, I would venture to call attention to the great injustice and inconvenience—to say nothing of the absurdity—involved in the rule hitherto adopted, of closing the gallery to the public on two days a week (Thursday and Friday), in order to give the full scope of it to the copyists, or so-called students. I believe it is very doubtful whether copying the pictures of great masters is in any way conducive to the making of a good artist; indeed, I have heard of opinions very strongly to the contrary being expressed by very good judges and practical men, too—Fuseli for one, if my memory does not fail me. I should like to know how many even decent "pot-boiler" operators have been produced by the practice in the now nearly half a century which has elapsed since the National Gallery was founded on the purchase of the Angerstein Collection, and who might not have become equally distinguished artists without resorting to this means of education. But whatever the number, if any, say half-a-dozen or a dozen, ought the value of their achievements to be considered as equivalent to the sacrifice of one-third of the annual usufruct of the national collection—in other words, to one-third of the capital stock invested in pictures and premises?

Why cannot the copying gentlemen do their handiwork under public scrutiny, as they do in most places abroad; or, if they are too bashful to expose their daubing gifts, why not put away a few pictures at a time, in a room apart, for them to practise at? I speak with the more feeling in this matter, because I happened to go last Thursday to the Gallery on purpose to inspect the Peel collection, of which your correspondent "H. O." had spoken so highly, and was denied admittance; and not I alone, for whilst I was there, three other parties came up, two in cabs, and, like myself, had to go away disappointed.

Trusting you will call attention to this grievance, I am, &c. A Country Cousin.

June 26.

SELF-ACTING CISTERN BELL-TRAP.



Sir,—The following is the sketch of a self-acting lead bell-trap, used upon the "standing waste" inside a cistern for the purpose of keeping down bad smell: it was used years ago. From A to B is 9in. This outside pipe C is 3½in. in diameter, and 1in. from top has small holes about ½in. in diameter all round it at that height. Then 7in. from top it has three small holes at same level, about ⅛in. in diameter, through which the water enters to fill the bell-trap. The ball crane which fills cistern is regulated to shut about 1in. or so below the ½in. holes, or what is the same, about 1in. below the top of the middle pipe, which is the overflow pipe, and which is about 1½in. in diameter. centre pipe between other two is 8in. long and 2⅝in. in diameter; it is soldered to top flange, and lifts off and on. This bell-trap is therefore self-filling, while it does not waste the water. As I have never seen this used anywhere except in one Glasgow shop, I should like to know if it has been used elsewhere, and how long since? The small old shallow bell-traps which are not self-acting, have been, I consider, the cause of many low fevers in cases where the ball cranes did not happen to be leaking so as to fill them.—I am, &c., Plumber.

ARCHITECTURAL PRACTICE IN DERBY.

Sir,—I think your attention should be directed to the extremely unprofessional conduct of a brace of architects at Derby, of which the following extract, from the *Derby Mercury*, gives particulars:—

DERBY BOARD OF GUARDIANS.

The following were present at the Derby Guardians' meeting on Tuesday:—Mr. Ratcliffe (in the chair), Mr. Brindley (vice-chairman), the Rev. J. Chancellor, Rev. J. E. Clarke, Hon. W. M. Jervis, Mr. Turner, Mr. Chadfield, Mr. Beswick, Mr. Earp, Mr. Okeden, Mr. Hives, Mr. Williamson, Mr. W. Hobson, Mr. Hefford, Mr. J. Taylor, Mr. J. Smith, Mr. Bloor, Mr. Sherwin, Mr. Whiston, Mr. W. H. Whiston, Mr. Denston, and Mr. T. Roe, jun.

The Clerk read the report of the committee appointed to consider a recommendation for increasing the convenience at the board offices, which was to the effect that the office at present used by the clerk should be appropriated for the purposes of committees, and that the housekeeper's-room should be converted into an office for the clerk.

The report was adopted on the motion of Mr. Williamson.

Mr. Whiston proposed that "Mr. John Shaw, College-place, should be appointed assessor for the purpose of assisting the Assessment Committee, upon the usual terms."

Mr. Beswick seconded the motion, which was carried.

The Clerk read a letter received from Messrs. Giles & Brookhouse, architects, relative to their recent appointment to prepare plans for the new workhouse. The firm in their communication stated that they had always considered and mentioned 3 per cent. as the lowest sum which would be a fair remuneration for the architect. They admitted, however, that before the advertisement appeared in the newspapers they had stated that if the board would retain them as their architects without competition, and no other local office proposed to accept 2½ per cent., they would accept that amount of remuneration rather than lose the appointment in competition. Under these circumstances, if the board considered them morally bound, they must accept the lowest sum; but having been appointed at 3 per cent. it appeared hard that the remuneration should be reduced to 2½ per cent. when the responsibility and labour remained the same.

Mr. Earp, in accordance with notice he had given, moved that the rate of remuneration should only be 2½ per cent.

Mr. Beswick having explained the reasons for issuing the advertisement at 3 per cent., moved that a committee should be appointed to confer with Messrs. Giles & Brookhouse upon the subject.

Mr. Hobson deprecated any such miserable so-called economy as that of reducing the remuneration to 2½ per cent. Messrs. Giles & Brookhouse had entered into a public engagement on the terms proposed by the board, and the board was bound in honour to adhere to those terms.

Mr. Turner stated that Messrs. Giles & Brookhouse had, prior to the discussion at the last meeting, informed him that they would be glad to accept a remuneration of 2½ per cent.

Mr. Roe, jun., seconded the proposition of Mr. Beswick.

Mr. W. H. Whiston said there had been quite sufficient discussion upon the question, and urged the board to adhere to the advertised conditions.

After a further discussion it was ruled that Mr. Earp's motion was totally irregular, and could not be put. He therefore consented to withdraw it.

This report tells its own tale of professional meanness so plainly that there is no occasion to emphasize it by further comment, nor will it do to dwell upon the dignity of a profession whose members are ready to drag it through such indignities as these. It is to the credit, however, of the rest of the Derby architects that, although they had not sufficient *esprit de corps* to enter a protest as a body to the Board of Guardians against this reduction of percentage, contrary to the laws of the profession and the rules of the Institute, they were none of them so destitute of self-respect as to attempt to disturb Messrs. Giles & Brookhouse in the enjoyment of their "3 per cent."—I am, &c.,

An Architect.

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Intercommunication.

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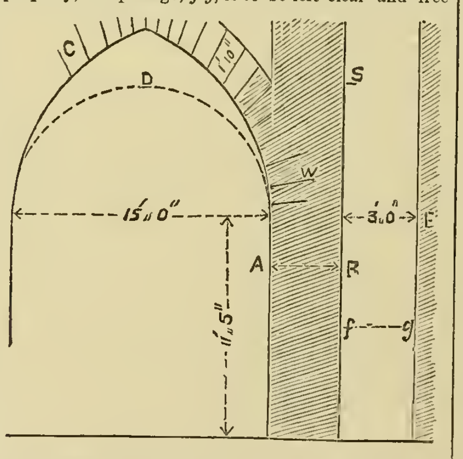
QUESTIONS.

[2249.]—**Sound-Board.**—I should feel obliged if any reader could favour me with information respecting sound-boards in reference to pulpits, platforms, orchestras, &c. he principle, mode of fixing, size, position, and other particulars. Also, works on the subject.—A. Y. E.

[2250.]—**Logarithms.**—Will any of your contributors oblige me by saying how numbers which have a decimal exponent (as $9^{3\cdot5}$) can be evolved otherwise than by logarithms?—Student.

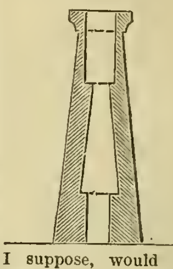
[2251.]—**Arches.**—I shall feel grateful to any kind reader if he will show me how to calculate the weight of wall above S, and the thickness the wall A B should be to ensure a secure abutment at W. E being private property, the passage, *f g*, is to be left clear and free from strutts, buttresses, or ties. Also, the span of arch (25ft.) is to be clear of any tie. The arch C will be 2ft. thick, and the weight to support about fifty tons. Should a half semi-arch, D, be adopted? How much weight of wall above S could be dispensed with, and substance A B reduced?—Stability.



[2252.]—**Work on Carving.**—Will any one, through "Intercommunication," inform me whether there is any good elementary work on carving published in English?—J. Tattersall.

[2253.]—**Leaky Rain-Water Tanks.**—I have lately built a rain-water tank with bricks and ground Barrow lime, and I am afraid the tank is not thoroughly water-tight. Would a coat or two of tar put it right? If so, what kind of tar should be used, and should one coat be quite dry and hard before another is put on?—Delta.

[2254.]—**Truss for Partition.**—I shall be obliged if one of your readers of "Intercommunication" would inform me of the best sort of truss to introduce in a 4in. partition, which is unsupported from below—that is to say, where there is a large room on the ground-floor, and the same space divided into two rooms on the one-pair floor. A sketch would oblige.—Delta.



[2255.]—**Measuring Brickwork.**—I wish to know what method would be adopted in practice to ascertain the superficial quantity of brickwork contained in a chimney-shaft of multangular shape on plan, varying in thickness, and having a uniform batter from its base to the summit. Would the mean exterior girth of each stage of thickness into its height, measured on the surface, be taken? And is anything allowed for the trouble of plimbing the angles, which, I suppose, would be of purpose-made bricks?—Student.

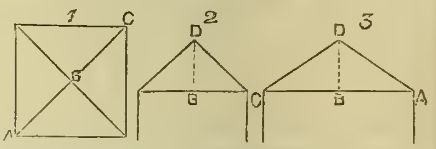
[2256.]—**Hardening Gutta-Percha.**—Can any reader inform me of the best thing to mix with gutta-percha to harden it?—A Subscriber.

[Second question involves an advertisement. Ed.]

REPLIES.

[2240.]—**College Architecture.**—Pugin's "Examples of Gothic Architecture," in which are elevations, &c., of some of the Oxford Colleges, drawn to scale.—M.

[2247.]—**Hips and Pitch of Roof.**—Any work on carpentry or construction may be expected to give you the information you want. Nicholson, in his "Dictionary of Architecture," goes into the consideration of roofs thoroughly. Briefly the elucidation is this:—Fig. 1 is plan of hipped roof; Fig. 2, transverse section of same; Fig. 3, diagonal section, showing hip. A B C on plan show position of A B C in diagonal section, the height, B D, on diagonal section being made the same as B D in transverse section. A D and D C on diagonal section show the pitch and length of hips required.—M.



[2248.]—**Roof Timbers.**—A "Student" will find what he requires in Gwilt's "Encyclopædia of Architecture." As they are generally useful, I extract the scantlings for the more ordinary-sized roofs:—

Span.	Tie Beam.	King Post.	Prin'l Rafter.	Strut.
Ft.	In.	In.	In.	In.
20	9 by 4	4 by 4	4 by 4	4 by 3
25	10 ,, 5	5 ,, 5	5 ,, 4	5 ,, 3
30	11 ,, 6	6 ,, 6	6 ,, 4	6 ,, 3

Above 30ft., and up to 45ft., two queen posts, with straining-piece, are required.

Span.	T. B.	Q'n P.	P. R.	Strut.	Straining Piece.
Ft.	In.	In.	In.	In.	In.
40	11 by 4	4 by 4	5 by 4	4 by 2	7 by 4
45	12 ,, 5	5 ,, 5	5 ,, 5	5 ,, 2½	7 ,, 5
50	13 ,, 6	6 ,, 6	6 ,, 5	5 ,, 3	7 ,, 6

For 6ft. bearing, the purlins should be 6in. by 4in.
,, 8 ,, ,, ,, 7 ,, 5
,, 10 ,, ,, ,, 8 ,, 6
,, 12 ,, ,, ,, 9 ,, 7

For 8ft. bearing the rafters should be 4in. by 2½
,, 10 ,, ,, ,, 5 ,, 2½
,, 12 ,, ,, ,, 6 ,, 2½

M.

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LEGAL INTELLIGENCE.

What is a Building?—Curious Point.—Mr. Henry Palmer, of Belgrave Cottage, Uxbridge-road, was summoned, on Tuesday, before Mr. Ingham, by Mr Knightley, the district surveyor of Hammersmith, for an infringement of the Building Act.—Mr. Knightley said that on the 26th of April last he discovered a wooden building in the defendant's garden. He served him with notice to remove it, but he had not done so. —In reply to Mr. Martin, who defended, Mr. Knightley said the building was upon wheels, but they were five inches only in diameter, and it would topple over if removed. The wheels had been put on for the purpose of evading the Act.—Mr. Martin said he would pledge himself to have the building, which was merely a van, drawn to the court.—Mr. Knightley said it could not be done without taking the building to pieces. It could not be removed through the house in its present state.—The defendant said he could wheel it along with the greatest ease. There was not anything in it except perches for the chickens.—Mr. Ingham asked him why he had put wheels upon it.—The defendant said because Mr. Knightley should not interfere with it. (Laughter.) —Mr. Ingham: Then, according to your opinion, it is nothing more than a large birdcage?—The Defendant: Yes, sir. (Renewed laughter.)—Mr. Ingham, after hearing the defendant, was of opinion that it was only a large birdcage, and dismissed the summons.

Liability of Sewer Authorities for Accidents.—Lock *v.* the City of London Commissioners of Sewers.—The plaintiff in this case (which was heard last week in the Court of Queen's Bench) fell down some steps in streets under the control of the Commissioners, and sustained an injury, for which he sued them. The question was whether they were liable.—Mr. Finlay was for the plaintiff, and Mr. Pritchard for the Commissioners.—The Court held that the Commissioners were not liable to an action, and that the only remedy was by indictment.

Surveyor's Fees.—Green *v.* M'Callum.—This was a case heard recently in the City of London Court. The plaintiff, it appeared, was employed to sell some property to the Government, for which he was to receive 5 per cent. commission. The property fetched £1,250, and in the agreement between the Government and the vendor there was a clause in which they stipulated to pay the surveyor's fees to the extent of £31 10s. This was accordingly done, and handed over by cheque, which, with another cheque for £31, as the amount of the 5 per cent. commission on the £1,250—viz., £62 10s., was given to Mr. Green. Plaintiff, however, contended that he was entitled not only to the Government cheque, but to £62 10s., the 5 per cent. commission agreed upon.—Mr. Francis, as counsel for Mr. M'Callum, said that if that were the case Mr. Green would receive 7½ per cent.—Mr. Jones stated that they (he and his partner) were instructed from the Record Office to purchase without an Act, and that the clause referring to the surveyor's fees was the usual one, except higher fees were given than usual, because there were valuations of fixtures, &c.—Judgment for the plaintiff.

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STAINED GLASS.

Bradford.—The east window of S. Patrick's (Roman) Catholic Church, Bradford, has been filled in with stained glass. The window consists of six lights, surmounted by geometrical tracery. In the two centre lights are figures of Our Lord and the Virgin Mary, seated on a golden throne. In the side lights on the right of the throne are figures of S. Patrick, S. Joseph, S. Thomas and S. Cuthbert, and on the left of the throne are figures of S. Bridget, S. Michael, S. Helen, and S. Veronica. The tracery consists of emblems of the Trinity. The window has been designed by Mr. John Powell, of Messrs. Hardman and Co.'s, of Birmingham, and the work has been executed by that firm at a cost of about £300. The style is fourteenth century.

Sheffield.—In the chancel of the new Baptist Church in Glossop-road, Sheffield, a stained glass window has just been placed by Mr. T. W. Camm, of Smethwick. The window consists of four lights, the subjects illustrated being "The Agony in Gethsemane," "The Birth of the Redeemer, and the Adoration of the Magi," "The Crucifixion," and "The Confession of Thomas," when he exclaims, "My Lord and my God." The tracery above represents Christ ascended in power, and receiving the adoration of the cherubim and seraphim. Beneath the window are placed the words "Alpha" and "Omega," and highly-coloured floral representations.

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STATUES, MEMORIALS, &c.

Torquay.—The inhabitants of Torquay have subscribed for a testimonial portrait of Sir Laurence Palk, in recognition of his services to the town by the erection of the new harbour and other works.

Falkirk.—The late Mr. Patrick Gentleman, who died in 1865, left a sum of money for the erection of an ornamental drinking-fountain in the burgh, and a design was prepared by Messrs. George Smith & Co., Glasgow, from which the fountain has been constructed. It is of iron, octagonal in form, with dome supported on eight pillars. From the centre of the dome rises an octagonal turret or spire, which tapers to about two feet in diameter, and the whole is surmounted by an eagle in her nest. In the centre of the dome underneath is the drinking-fountain. The height from the ground to the cornice round the bottom of the dome is 9ft., and the total height of the fountain is 21ft. The diameter of the dome is about 13ft. The foundation and steps are of granite. The cost of the fountain is about £200.

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Art Education in America.—Mr. Walter Smith, head master of the Art Schools in Leeds, Bradford, and Wakefield, was recently invited by the State education authorities of Boston, America—on the recommendation of Mr. Cole, of South Kensington—to visit that city. in order to advise as to the best means of establishing a training school for art-masters, a museum of art works, and art schools throughout the State of Massachusetts. Mr. Smith, after an absence of six weeks, has returned to Leeds, the object of his visit having been successfully achieved. At the close of his stay in Boston, very liberal offers were made by the authorities to induce him to take up his residence in that city and personally direct the whole art education of the State. These offers have been duly considered since his return, and Mr. Smith, on the recommendation of the Science and Art Department in London, has accepted them. The positions which he will hold in the New World, are—Chief State Inspector of Schools of Art in Massachusetts Commonwealth; Head Master of the Normal Training School for Art Masters, in connection with the Museum; a Professorship of Sculpture; and an Art Lectureship.

Our Office Table.

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Asphalte in Austria —The prospectus has been issued of the Anglo-Austrian Bituminous Rock Paving Company (Limited), which has been formed for the purpose of acquiring the exclusive rights to the supply and use of the bituminous Rock of Val de Travers, Switzerland, for Austria, for which a concession has been entered into with the Neuchatel Bituminous Rock Company, in consideration of 5,000 fully paid-up shares of £10 each. Negociations are entered upon for its immediate introduction into Vienna, and which, it is expected, will lead to the employment of this material for the large system of tramways in that city.

New York Harbour.—There is to be an entire remodelling of the docks, wharves, and piers of New York, and the work has been placed in charge of Major-General George B. M'Clellan. New York has a water front available for commerce extending 24¾ miles, and it is proposed to construct along this a permanent river wall, which will make a river street varying from 175ft. to 250ft. in width, to build ample piers projecting from this wall, and, wherever necessary, to cover them with substantial sheds for the protection of goods. The cost of this improvement is estimated to be at least 20,000,000 dols., and several years will be required to complete it.

Epping Forest.—It appears likely that something will be done at last to check the constant encroachments which are taking place on Epping Forest. The Government and the House of Commons having failed to take any practical step towards arresting enclosures, attention has been turned to the Corporation of London, which has at various periods of history lent its powerful aid to the popular cause when other help was wanting. The result is that the Corporation, as copyholders of Wanstead, have, through their Commissioners of Sewers, served notice upon Lord Cowley's trustees, his steward and agents, in reference to the present attempted enclosure of 30 acres on Wanstead Flats, requiring that all the fences and gates recently erected be forthwith removed. This is the commencement of proceedings to test the right of the Lord of the Manor to enclose without the sanction of Parliament. Copies of the notice are extensively posted throughout the Forest.

Society for Improving the Dwellings of the Poor.—The anual meeting of this association was held on Thursday week at Willis's Rooms, under the presidency of the Earl of Shaftesbury. The report showed that the mortality amounted only to 21 in an average population of 1,557, or about 15·4 per thousand. The expenses for the year had been less than the receipts by £586. The real property belonging to the society was estimated at £35,992, while the general liabilities amounted to £20,698. The Earl of Harrowby, in moving the adoption of the report, said the provision of dwellings for the poor in London and large towns had been found not to be a very profitable speculation, and it must be looked upon rather as a matter of benevolence. His lordship moved a resolution expressive of thankfulness for the success which had attended the operations of the society. Canon Nisbett seconded the resolution, which was unanimously adopted. Other gentlemen addresssed the meeting.

Worcester Diocesan Architectural Society.—An excursion of this society has been arranged to take place on Wednesday, July 5, when several interesting churches, and unusually valuable examples of domestic architecture, dating from the fourteenth to the seventeenth century, at, and in the neighbourhood of, Broadway will be visited, according to the following programme:—The members and their friends will assemble at the Evesham Station on the Great Western Railway at 10.30 a.m., and proceed in carriages to Child's-Wickham, Buckland, and Broadway, where dinner will be provided (at 3s. each), at the Lygon Arms, at two o'clock. The old church of S. Eadburgh, the modern church, and a fourteenth century house, formerly belonging to the Abbots of Pershore, will then be examined; after which the excursionists will visit the churches of Willersey, Saintbury, and Western Subedge; returning to Evesham in time for the 9.15 p.m. train to Worcester.

The Rock of Cashel.—A mixed committee of Protestant and (Roman) Catholic gentlemen has been formed in Ireland for the purpose of purchasing from the Irish Church Commisioners, and securing from further decay, the well known "Rock of Cashel," with the ultimate view of restoring the now roofless Cathedral of S. Patrick for public worship, and preserving King Cormac's Chapel. The rock was abandoned about a century ago by the then Archbishop, Dr. Price, who obtained an act of Parliament constituting S. John's Church, which stood on a lower and more accessible site, the cathedral of the Irish establishment, and since that time the cathedral has been disused. The "Rock of Cashel" is rich in historical associations. Upon its summit the ancient Kings of Munster had their palace, and were solemnly crowned. It is an old tradition that the king of that region was baptised upon the rock by the hands of S. Patrick. Cormac M'Carthy, King of Desmond, crowned it with the beautiful Norman church which still bears his name; and Donald O'Brian, King of Lemerick, added the fabric of the old cathedral, within the walls of which was celebrated the Synod of Cashel in A.D. 1172, just 700 years ago.

Protection of Stone.—Dr. Robert, of Paris, earnestly recommends the use of salts of copper as the best preservative against the weathering of stone in a moist climate, and endeavours to prove that the wasting away of sandstone and granite is due to various causes, one of the most important of which is the development of a minute lichen (the *Lepra antiquitalis*). This plant is so destructive that the beautiful marble sculptures in the park at Versailles would be completely destroyed by it in the space of fifty years, unless precautions were taken to arrest its ravages. Dr. Robert states that the amount of weathering away of rocks of all kinds, granite not excepted, is much greater than the public generally are aware of, especially when subjected to the influence of a moist atmosphere. Thus the obelisk of Luxor, which was brought to Paris from Egypt forty years ago, has become completely bleached out, and full of small cracks, while for the previous forty centuries during which it stood in Egypt no change had been produced.

Sir Christopher Wren on Pewdom.—"Since Providence, in great mercy, has protracted my age to the finishing the Cathedral Church of S. Paul, I shall presume briefly to communicate my sentiments, after long experience. A church should not be so filled with pews but that the poor may have room enough to stand and sit in the alleys, for to them equally is the Gospel preached. It were to be wished that there were no pews, but benches; but there is no stemming the tide of profit and the advantage of pew-keepers."—Wren's "Parentalia."

Fatal Scaffold Accident.—A sad accident happened on Friday week at the new shed in course of construction for the Midland Railway Company at Bolton Bridge, Manningham. In carrying on the work, external scaffolding was erected, and one of the spars suddenly broke. A mason named Wetherill fell to the ground, alighting on his head, and was killed almost instantaneously. Another man, named Gill, in his fall caught the hoisting chain, and slid upon it to the ground, receiving severe injuries in the descent. A third man, more fortunate than his fellows, held by the edge of the chimney till rescued.

Trade Outrage at Salford.—On Wednesday two hand-brickmakers were brought before the magistrates at Salford, charged on remand with attempting to burn down some houses that had been erected with machine-made bricks. The names of the prisoners were John Rogers and William Manning. Police Sergeant Jowett said on Sunday night, about eleven o'clock, he observed three men enter the houses, and shortly after he heard a "thud," as if something had fallen on the floor of the fifth of the seven houses, and he then saw five men rush out at the back door. The prisoner Manning was one of those men, and witness ran after him and arrested him. On examining the house he found there had been a fire in the lobby, and he found some boards which had been on fire, and near to them a bottle which had contained paraffine oil. Detective Power said the prisoner Rogers was one of the men who ran from the house, and he arrested him about the same time the other prisoner was taken. In addition to the bottle found in the house, the remains of another bottle which had contained paraffine oil was found in the ash-pit. The prisoners were committed for trial at the assizes. A third brickmaker, named John Atherton, was also committed to the assizes, charged with attempting to set fire to a house the same night in Higher Broughton.

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The London School Board have selected eleven of the competitors for further consideration, out of the number applying for the post of architect. Messrs. Roger Smith and Edis state that they are not competitors.

Chips.

A correspondent informs an American journal that terra-cotta of the finest quality has been found near Atlanta, Georgia, and is now being worked into drain pipes, chimney tops, building ornaments, flower vases, &c.

The Queen has sanctioned the restoration of the pulpit and glass in the Chapel of the Savoy, but the restored meter runs only for the moderate time of twenty minutes, in place of the hour which the original glass measured.

It is now, we understand, determined to exhibit the electric light to denote the night sittings of the Houses of Parliament on the summit of the Victoria Tower, instead of the Clock Tower, and the necessary machinery is in course of construction, under the direction of Captain Galton, of the Engineers.

On Tuesday week the new Police Courts, which are part of a pile of municipal buildings that have just been erected in Belfast, at an expense of upwards of £18,000, were formally opened.

At the Upper Forest Tin Works, near Swansea, Messrs. W. Hallam and Co. have rolled the thinnest sheet of iron ever produced. It requires 4,800 such to make an inch in thickness.

An addition has been made to the Print-room of the British Museum, for the reception of folios of prints and drawings.

The new thoroughfare from Piccadilly to Park-lane, through Hamilton-place, just completed by the Metropolitan Board of Works, was opened on Monday week.

The Albert-bridge, Glasgow, was opened on Wednesday week, without any ceremony.

On Saturday week, the Halifax Piece Hall, built in 1779, was opened by the Mayor as a wholesale market. The Corporation acquired possession of the building two years ago, and by the conversion of many of the 300 rooms into shops, excellent accommodation has been provided for the wholesale dealers.

The new portion of the Chatham Extension Docks was opened on Wednesday week by the reception of H. M. S. "Invincible" into the repairing basin.

A Committee of the House of Commons, on Thursday week, sanctioned the bill for creating a great central metropolitan railway station between Holborn Viaduct and Farringdon Station.

Sir John Pakington has accepted the office of President of the Social Science Congress, to be held at Leeds on October 4.

Mr. Frederick Tayler has resigned the Presidency of the Society of Painters in water colours, which he has held since the retirement of Mr. J. F. Lewis, and Mr. J. Gilbert has been selected in his place.

The Council of the Society of Engineers have made arrangements for a visit of the Society to the Phœnix Paper Mill, at Dartford, on Monday next, the 3rd of July, 1871. The train will leave Charing-cross Railway Station at 10.15 o'clock, Cannon-street, at 10.25, and London-bridge, at 10.28 a.m.

On Sunday week the roof of a Primitive Methodist Chapel, in Bolton, fell in. Fortunately no one was in the building at the time.

During the thunderstorm on Tuesday week, the Church of S. Nicholas, Deptford, was struck by lightning. The electric fluid first struck the flag-staff, shivering it to pieces, some of the splinters being thrown 200 yards. It then went through the roof of the church, leaving a large hole, breaking the windows, and passing into the earth, close to a tombstone, a piece of which was broken off and blackened.

The Institution for the Blind, situated in S. George's Circus, Southwark, is expected shortly to be removed into the country.

The Joiners' Company have given twenty-five guineas to the fund now being raised for the completion of S. Paul's Cathedral.

The Dulwich College authorities have given a site on their estate for the erection of the new church of S. Peter, Lordship-lane. The piece of ground is conveniently situated some 300 or 400 yards in the rear of the railway station, and will give the church a frontage on the main road. £3,000 has been raised towards the cost of the building.

Timber Trade Review.

Prices, June 27.—Per Petersburg standard:—Quebec yellow pine, 10 to 13ft. 3 × 9 and 10in., £15 10s.; 10 to 12ft. 2 × 7 to 11in., £14 10s.; ditto first floated yellow pine, 12ft 2 × 6 to 11in., £12 10s.; ditto second bright, 13ft. 3 × 11 £13; Archangel first yellow, £14 to £14 10s.; Soderham mixed yellow, £8 10s. to £10; ditto third yellow, £7 10s. to £8 15s.; Skelleftea mill-sawn yellow, £8; Grimstadt first yellow, £7 15s. to £9; ditto second, £7; ditto first white, £ 85s. to £8 10s.: ditto second white, £7 15s.; Hernosand first and second mixed yellow, £10 15s. to £11; Hudikswall second mill-sawn yellow, £9 10s. to £10; ditto third yellow, £9; Ljusne first and second mixed mill-sawn yellow, £10 to £10 10s.; ditto third yellow, £9 10s. to £9 15s.; Laurvig second yellow, £8 10s.: ditto first white, £8 15s.; ditto second white, £8 5s.; Munksund first and second mixed yellow, £9 to £9 10s.; Nyham mill-sawn yellow, £9 to £9 5s.; Nystadt mill-sawn yellow, £7 to £7 5s.; Petersburg first white, £9 to £9 5s.; Dram second yellow, £6 10s. to £6 15s.; ditto third yellow, £6 to £6 10s.; Skutskar first and second mixed mill-sawn yellow, £9 10s. to £10; ditto third yellow, £8 5s. to £8 10s.; ditto fourth yellow, £7 10s. to £7 15s.; Sundswall first and second mixed yellow deals, £10 10s. to £10 15s.; 3 × 7 battens, £8 10s. to £9; Sannesund second yellow battens $2\frac{1}{2}$ × $6\frac{1}{2}$, £7 10s. to £7 15s.; Wifsta Warf first and second mixed yellow, £9 5s. to £9 10s.; ditto third yellow, £8 5s. to £8 10s.; Pensacola pitch pine, £12 10s. to £12 15s.

Lathwood per cubic fathom:—Petersburg, £5 10s. to £5 15s.

Prepared flooring boards per square:—Fredrickstadt first yellow, $1\frac{1}{4}$ × 7, 14s.; 1 × 7, 10s. to 10s. 3d.; ditto second yellow, 1 × 7, 9s. to 9s. 6d.

Trade News.

WAGES MOVEMENT.

The Leeds Joiners' Arbitration Board.—This board, consisting of seven master builders and seven operative joiners, with Mr. Jowitt as umpire, met for the last time in the rooms of the Chambers of Commerce, on Friday last. Mr. Cooper, secretary to the men, said that there was a desire amongst the bulk of the workmen that seven of their number, including one or two members of the board, should meet an equal number of the masters, with Mr. Jowitt as chairman (not as umpire), for the purpose of considering the nine hours' question, and the other questions at present in dispute between them and the masters. Mr. J. Hall Thorp explained to the men that hitherto the masters had felt that they ought not to treat with any body of men in regard to disputes except those composing the arbitration board, which would cease to exist, according to the terms of its establishment, on the 1st of July next. Mr. Alderson wished to point out in respect to the present moot points, that although the men were claiming an advanced price per hour, their wages per week would be 1s. 2d. less. Mr. Thorp replied that if the men worked six hours less per week that would be thirty-four days less per year per man, so that it was a serious matter to the masters, whose rent, taxes, and general expenses would remain undiminished. In the course of the sitting of the board, regret was expressed that that was its last meeting. By the workmen it was stated that those whom they represented thought the masters had not been true to the decisions of the board; and by the masters it was urged that the board had worked more beneficially for the men than their employers, as the latter had suffered from the competition of non-association masters who had acted without any regard to the opinions of the board. Both sides, however, agreed in commending the conduct of the umpire, Mr. Jowitt, to whom a cordial vote of thanks was unanimously passed. With reference to the wish of the men to meet the masters, those of the latter who were present said a general meeting of their body was to be held on the following Wednesday, when they would recommend compliance with the wish, which should be sent to them in writing, and aim at arranging for a meeting on the following Friday evening.

Middleton.—The carpenters and joiners of Middleton have notified their willingness to accept 29s. per week and one hour off on Saturdays, instead of 30s. per week, for which they gave notice some months ago. With one exception, the masters have conceded the new request. By this arrangement the increase in the wages is 1s. per week.

Wolverhampton.—The prospect of a speedy and amicable termination to the brasscasters' strike at Wolverhampton has been upset by the refusal of the masters to submit the dispute to arbitration, and an announcement of their determination not to grant the advance asked for.

TENDERS.

Beckenham.—For the completion of two villas for W. R. Mace, Esq. Mr. Joseph Fogerty, 1, Westminster-chambers, architect:—

Hooker	£8,962
Colls & Son	7177
Browne & Robinson	6989
Foster (accepted)	6845
Gascoyne & Son (not received)	

Blunham.—For the erection of a dwelling-house at Blunham, Bedfordshire. Mr. John Usher, architect:—

Cunvin	£349	0	0
Twelvetrees	341	0	0
Brown	285	9	6
Foster	285	0	0
Knight & Boston	277	0	0
Haynes	275	0	0
Field	269	0	0
Edey & Wildman	262	12	0

Crickhowell.—For the erection of a workhouse at Crickhowell, Mr. W. P. James, architect, Cardiff:—

Lewis	£8493
Prin	7915
Moreland	7200
Jones, Bros.	7000
Forster	6960
Miles	6870
Welsh & Son	6680
Bolt	6550
Daviss	6324
Burgoyne	6215
Biggs	5778

City.—For works at No. 6, Poppin's-court, Fleet-street:—

Hough	£259
Colwill	240
Peters	235

Derby.—For the erection of market buildings for the Derby Hide, Skin, and Fat Company (Limited), Cattle Market. Mr. George Thompson, Borough Surveyor:—

Dusautoy	£826
Thompson	824
Gadsby	800
Bridgart (accepted)	794

Guildford.—For new offices and stores, Portsmouth-road, Guildford. Mr. Henry Peak, architect:—

Loe, T. & J. (accepted)	£1347

Guildford.—For alterations to the front of house, No. 62, High-street, Guildford. Mr. Henry Peak, architect:—

Nye (accepted)	£124	5	0

Hampstead.—For work at "Bartrams." Mr. C. G. Wray, architect:—

Batchelar & Robson	£3913	2	8
Rooney, Bros.	3702	0	0
Cook	3150	5	0
Spittle	3071	0	0
Bridgman & Nuttball	2851	0	0
Heath	2847	1	0
Josolyne	2830	3	6
Jeffrey & Dickinson	2816	16	6
Nightingale	2683	0	0
Till	2641	0	0
Bowler	2584	0	0
Stephenson	2367	0	0
Ball	2346	0	0
Pearce	2334	5	2
Robbins & Co.	2079	0	0

Hampstead.—For alterations and additions to eight houses, Frederick-street, Hampstead-road. Mr. B. Fletcher, architect:—

Fairhall & Weeks	£2856
Waterson & Co.	2392
Bridgman & Nutthall	1904

Hoxton.—For alterations and additions to the head-quarters of the N.E. London R.V. Corps. Mr. B. Fletcher, architect:—

Snowden	£236
Cole	205
Kilby	198
Auley	196
Burtwell	190
Moore	176
Bowley	163
Fairhall & Weeks (accepted)	162
Lewis	151

Kensington.—For the erection of nave and aisles of the Church of S. Matthias, Earl's Court, Kensington. Mr. T. H. Hakewill, architect. Quantities supplied by Messrs. Widnell & Trollope:—

Macey	£2974
Myers	2964
Dove Bros.	2795
Adamson & Sons	2777
Aviss & Co.	2644

Manchester.—For alterations and additions to Mr. James Burnett's shop, Broad-street, Pendleton. Mr. Alex. Mackenzie, architect:—

Wilkinson	£315
Barlow	315
Daniels (accepted)	310

Norwood.—For the erection of villa in the Beulah-road. Mr. B. Fletcher, architect:—

Contract 1.—For Carcase:—

Burtwell	£403
Dennett	367
Priddle	320
Fairhall & Weeks	269
Waterson & Co. (accepted)	267

Contract 2.—For Further Works:—

Waterson & Co. (accepted)	£239

Nottingham.—For the erection of three houses and stables, 80, Russell and Tennyson-streets, Nottingham. Messrs. Robert Clarke & Son, architects:—

Hind	£1500
Johnson	1495
Slimm	1490
Wool & Slight	1475
Bell & Son	1455
Vickers	1450
Wood & Son (accepted)	1445

Reigate.—For the erection of three cottages in Holmesdale-road, to be used as a lecture-room. Mr. Gregg, architect:—

Nightingale Brothers	£620
Holdsworth	600
Pollard	578
Nightingale	418

Surrey.—For new house at Worplesdon. Mr. Henry Peak, architect, Guildford:—

Loe, T. & J.	£1085	0	0
Mason	1073	0	0
Strudwick	1064	0	0
Goddard & Son	1045	0	0
Swayne & Son	985	10	0
Inkpen	949	0	0
Bristow & Burdett	929	10	6
West (accepted)	878	12	0

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